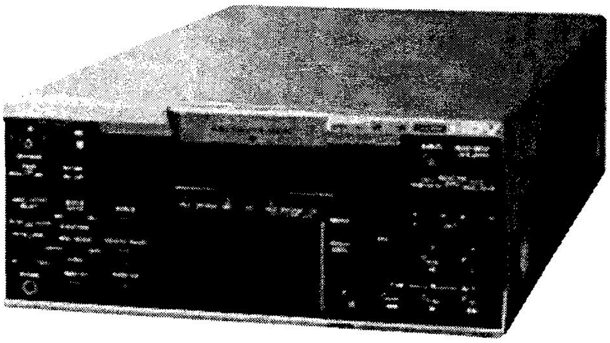
HVR-M25J/M25U/M25N/M25E/ M25P/M25C
RMT-DS5

SERVICE MANUAL

Ver 1.1 2006.08
Revision History

How to use Acrobat Reader

US Model
Canadian Model
AEP Model
E Model
Chinese Model
Japanese Model



R MECHANISM (MDX-R211)

Link

- SPECIFICATIONS
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- ADJUSTMENT
- INSTRUCTION MANUAL

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

DV Digital Video Cassette   Mini DV Digital Video Cassette

DIGITAL HD VIDEOCASSETTE RECORDER

SONY®

2006H0500-1

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Published by Kohda TEC

Sony EMCS Co.

These specifications are extracted from instruction manual of HVR-M25U/M25N/M25E/M25P.

ENGLISH JAPANESE

Self Diagnosis Supported model

HDV

HDV 1080i

DVCAM™

SPECIFICATIONS

System

Video/Audio recording/playing head system
Rotating dual-head helical scan
Audio recording format (HDV)
MPEG-1 Audio Layer2
16-bit 48 kHz (stereo)
Transfer rate 384 kbps
Audio recording format (DVCAM (DV))
12-bit Fs 32K (Channel 1/2, Channnel 3/4)
16-bit Fs 48K (Channel 1/2)
Video signal 1080/60i, NTSC color, EIA standard system
1080/50i, PAL color, CCIR standard system
Usable cassettes Standard DVCAM cassettes with DVCAM mark
Mini DVCAM cassettes with DVCAM mark
Tape speed (HDV)
Approx. 18.812 mm/s
Tape speed (DVCAM)
Approx. 28.218 mm/s
Tape speed (DV) SP: Approx. 18.812 mm/s
Recording/playback time (HDV)
Approx. 276 min
(using PHDV-276DM)
Approx. 63 min
(using PHDVM-63DM)
Recording/playback time (DVCAM)
Approx. 184 min
(using PHDV-276DM)
Approx. 41 min
(using PHDVM-63DM)
Recording/playback time (DV SP)
Approx. 276 min
(using PHDV-276DM)
Approx. 63 min
(using PHDVM-63DM)

AUDIO jacks

IN Pin jack: –10/–2/+4 dBu
Impedance: Minimum 47 kΩ (kilo ohms), unbalanced
Maximum input level:
–10: +18 dBu (approx. 6 Vrms)
–2: +24 dBu (approx. 12.5 Vrms)
+4: +30 dBu (approx. 25 Vrms)
OUT Pin jack
Impedance: Maximum 1 kΩ (kilo ohms)
Output level: 47 kΩ (kilo ohms) loading, unbalanced
–10 dBu (= full bit –20 dB) 60i system
–10 dBu (= full bit –18 dB) 50i system
PHONES Stereo minijack (ø 3.5), 8Ω (ohms) loading

VIDEO jacks

IN/OUT BNC type, unbalanced
1.0 Vp-p
(75Ω (ohms), sync negative)
Sync signal:
0.286 Vp-p (60i/NTSC)
0.3 Vp-p (50i/PAL)
Burst signal:
0.286 Vp-p (60i/NTSC)
0.3 Vp-p (50i/PAL)

S VIDEO jacks

IN/OUT Mini DIN 4-pin, unbalanced
Luminance signal:
1.0 Vp-p
(75Ω (ohms), sync negative)
Sync signal:
0.286 Vp-p (60i/NTSC)
0.3 Vp-p (50i/PAL)
Chrominance signal:
0.286 Vp-p (60i/NTSC)
(burst, 75Ω (ohms))
0.3 Vp-p (50i/PAL)
(burst, 75Ω (ohms))

HDMI OUT jack

Video Type A (19 pin)
480i, 576i, 480p, 576p, 1080i, 720p
Audio 2 channel liner
PCM 48 kHz/16 bits

COMPONENT OUT jacks

OUT BNC type
Output at 480i NTSC
With [BETACAM] selected in [IN/OUT REC] menu
Y: 1.0 Vp-p
(with 0.286 Vp-p sync negative, output impedance 75 Ω (ohms), unbalanced)
Pb/Cb/B-Y, Pr/Cr/R-Y: 0.7 Vp-p
(output impedance 75 Ω (ohms), unbalanced)
(75% color bars with 7.5 IRE setup)
With [SMPTE] selected in [IN/OUT REC] menu
Y: 1.0 Vp-p
(with 0.3 Vp-p sync negative, output impedance 75 Ω (ohms), unbalanced)
Pb/Cb/B-Y, Pr/Cr/R-Y: 0.7 Vp-p
(output impedance 75 Ω (ohms), unbalanced)
(100% color bars with no setup)
Output with other settings
Y: 1.0 Vp-p
(output impedance 75 Ω (ohms), unbalanced)
Pb/Cb/B-Y, Pr/Cr/R-Y: 0.7 Vp-p
(output impedance 75 Ω (ohms), unbalanced)
(100% color bars with no setup)
480i/480p:
Y: with 0.3 Vp-p sync negative
1080i/720p:
Y/Pb/Pr: with 0.6 Vp-p 3-level sync

i HDV/DV jack

i.LINK (IEEE1394, 4-pin connector S100)

Remote control

LANC Stereo mini-minijack (ø 2.5)
CONTROL S IN Stereo minijack (ø 3.5)

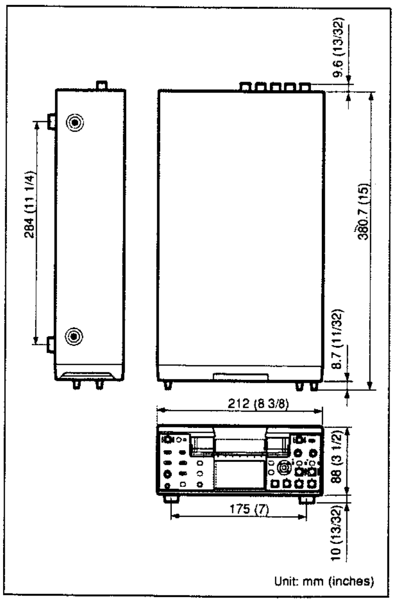
LCD screen

Picture 6.8 cm (2.7 type)
Total dot number 211 200 dots
960 (Horizontal) × 220 (Vertical)

General

Peak inrush current
Hot switching inrush current, measured in accordance with European standard EN55103-1: 13.0 A (230 V)

Power requirements
HVR-M25U
AC120 V, 60 Hz
HVR-M25N
AC100-240 V, 50/60 Hz
HVR-M25E
AC220-240 V, 50 Hz
HVR-M25P
AC100-240 V, 50/60 Hz
Power consumption (during play back)
12 W
Operating temperature
5 °C to 40 °C (41 °F to 104 °F)
Storage temperature
–20 °C to +60 °C
(–4 °F to +140 °F)
Dimensions Approx. 212 × 98 × 390.3 mm
(8 3/8 × 3 7/8 × 15 3/8 inches)
(w/h/d, including projecting parts and controls)



Mass Approx. 4.3 kg (9 lb. 7 5/8 oz.)
Supplied accessories
Remote Commander (1)
Power cord (1)
Size AA batteries (2)
Cleaning cassette (1)
Operating Instructions (1)
See page 5-34.

Design and specifications are subject to change without notice.

自己診断搭載機種

HDV
HDV 1080i

DVCAM

概略仕様

システム

ヘッドシステム（映像／音声、記録／再生）	
	回転2ヘッドヘリカルスキャン
録音方式（HDV）	MPEG-1 Audio Layer2
	16ビット48 kHz（ステレオ）
	転送レート 384 kbps
録音方式（DVCAM（DV））	
	12ビットFs32K（チャンネル1/2、チャンネル3/4）
	16ビットFs48K（チャンネル1/2）
映像信号	1080/60i方式、NTSCカラー、EIA標準方式
	1080/50i方式、PALカラー、CCIR標準方式
使用可能カセット	DVCAMマークのついた標準DVCAMカセット
	DVCAMマークのついたミニDVCAMカセット
テープ速度（HDV）	約18.812 mm/秒
テープ速度（DVCAM）	
	約28.218 mm/秒
テープ速度（DV）	約18.812 mm/秒
録画・再生時間（HDV）	
	276分（PHDV-276DM使用時）
	63分（PHDVM-63DM使用時）
録画・再生時間（DVCAM）	
	184分（PHDV-276DM使用時）
	41分（PHDVM-63DM使用時）
録画・再生時間（DV SP）	
	276分（PHDV-276DM使用時）
	63分（PHDVM-63DM使用時）

AUDIO端子

IN	ピンジャック：−10/−2/+4 dBu
	インピーダンス：47 kΩ以上、不平衡
	最大入力レベル：
	−10：+18 dBu（約6 Vrms）
	−2：+24 dBu（約12.5 Vrms）
	+4：+30 dBu（約25 Vrms）
OUT	ピンジャック
	インピーダンス：1 kΩ以下
	出力レベル：（47 kΩ負荷時、不平衡）
	60i時：−10 dBu（フルビット−20 dB）
	50i時：−10 dBu（フルビット−18 dB）
PHONES	ステレオミニジャック（ø3.5）
	8 Ω負荷

VIDEO端子

IN/OUT	BNC型、不平衡、
ビデオ信号	1.0Vp-p、75 Ω、負同期
同期信号	0.286 Vp-p (60i/NTSC)
	0.3 Vp-p (50i/PAL)
バースト	0.286 Vp-p (60i/NTSC)
	0.3 Vp-p (50i/PAL)

S VIDEO端子

IN/OUT	4ピンミニDIN、不平衡
ビデオ信号	Y: 1.0Vp-p、75 Ω、負同期
	C: 0.286 Vp-p、バースト、75 Ω (60i/NTSC)
	0.3 Vp-p、バースト、75 Ω (50i/PAL)
同期信号	0.286 Vp-p (60i/NTSC)
	0.3 Vp-p (50i/PAL)

HDMI OUT端子

	タイプA（19ピン）
映像	480i、576i、480p、576p、1080i、720p
音声	2チャンネルリニア
	PCM 48 kHz/16 bits

COMPONENT OUT端子

OUT　BNC型

480iNTSC出力時

[IN/OUT REC]メニューにて[BETACAM]選択時
Y: 1.0 Vp-p
(0.286 Vp-p 負同期付き、75 Ω、不平衡)
Pb/Cb/B-Y、Pr/Cr/R-Y: 0.7 Vp-p (75 Ω、不平衡)
(7.5 IREセットアップ付き75%カラーバー時)

[IN/OUT REC]メニューにて[SMPTE]選択時
Y: 1.0 Vp-p
(0.3 Vp-p 負同期付き、75Ω、不平衡)
Pb/Cb/B-Y、Pr/Cr/R-Y: 0.7 Vp-p(75 Ω、不平衡)
(セットアップなし100%カラーバー時)

その他の出力の場合
Y: 1.0 Vp-p (75 Ω、不平衡)
Pb/Cb/B-Y、Pr/Cr/R-Y: 0.7 Vp-p(75 Ω、不平衡)
(セットアップなし100%カラーバー時)
480i/480pはYに0.3 Vp-p負同期付き
1080i/720iはY/Pb/Prに0.6 Vp-pの3値同期付き

i HDV/DV端子

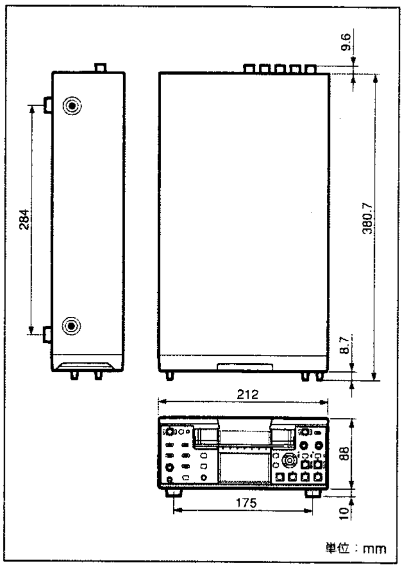
i.LINK（IEEE1394、4ピンコネクター S100）

リモートコントロール端子

LANC	ステレオミニミニジャック（ø2.5）
CONTROL S IN	ステレオミニジャック（ø3.5）
液晶画面	
画面サイズ	6.8 cm（2.7型）
総ドット数	211 200ドット
	横960×縦220

電源部・その他

電源	AC100 V、50/60 Hz
消費電力	10 W（再生時）
許容動作温度	5 ℃～ 40 ℃
許容保存温度	− 20 ℃～ 60 ℃
最大外形寸法	212× 98× 390.3 mm（幅／高さ／奥行き）
	（最大突起含む）



本体質量	約4.3 kg
付属品	リモコン（1）
	電源ケーブル（1）
	単3形乾電池（2）
	クリーニングカセット（1）
	取扱説明書（1）
	保証書（1）
	ソニー業務用製品ご相談窓口のご案内（1）

本機の仕様および外観は、改良のため予告なく変更することがありますが、ご了承ください。

Model information table

Model	HVR-M25J	HVR-M25U	HVR-M25N	HVR-M25E	HVR-M25P	HVR-M25C
Destination	J	US, CND	E	AEP	E	CH

- Abbreviation

  AR : Argentine model
  AUS : Australian model
  BR : Brazilian model
  CH : Chinese model
  CND : Canadian model
  EE : East European model
  HK : Hong Kong model
  J : Japanese model
  JE : Tourist model
  KR : Korea model
  NE : North European model

CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

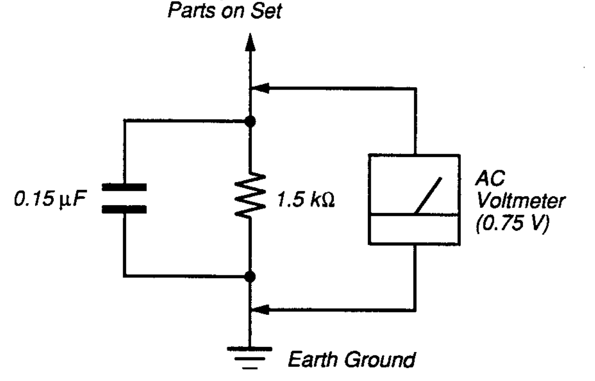


Fig. A Using AC voltmeter to check AC leakage

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

UNLEADED SOLDER

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size)

LF: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40 °C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350 °C .
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

注意
電池の交換は，正しく行わないと破裂する恐れがあります。電池を交換する場合には必ず同じ型名の電池又は同等品と交換してください。

サービス，点検時には次のことにご注意下さい。

1. **注意事項をお守りください。**
   サービスのとき特に注意を要する個所については，キャビネット，シャーシ，部品などにラベルや捺印で注意事項を表示しています。これらの注意書き及び取扱説明書等の注意事項を必ずお守り下さい。
2. **指定部品のご使用を**
   セットの部品は難燃性や耐電圧など安全上の特性を持ったものとなっています。従って交換部品は，使用されていたものと同じ特性の部品を使用して下さい。
   特に回路図，部品表に⚠印で指定されている安全上重要な部品は必ず指定のものをご使用下さい。
3. **部品の取付けや配線の引きまわしはもとどおりに**
   安全上，チューブやテープなどの絶縁材料を使用したり，プリント基板から浮かして取付けた部品があります。また内部配線は引きまわしやクランパによって発熱部品や高圧部品に接近しないよう配慮されていますので，これらは必ずもとどおりにして下さい。
4. **サービス後は安全点検を**
   サービスのために取外したネジ，部品，配線がもとどおりになっているか，またサービスした個所の周辺を劣化させてしまったところがないかなどを点検し，安全性が確保されていることを確認して下さい。
5. **チップ部品交換時の注意**
   - 取外した部品は再使用しないで下さい。
   - タンタルコンデンサのマイナス側は熱に弱いため交換時は注意して下さい。
6. **フレキシブルプリント基板の取扱いについて**
   - コテ先温度を270℃前後にして行なって下さい。
   - 同一パターンに何度もコテ先を当てないで下さい。（3回以内）
   - パターンに力が加わらないよう注意して下さい。
7. **無鉛半田について**
   無鉛半田を使用している基板には，無鉛（Lead Free）を意味するレッドフリーマークがプリントされています。
   （注意：基板サイズによっては，無鉛半田を使用していてもレッドフリーマークがプリントされていないものがあります）
   LF：レッドフリーマーク
   無鉛半田には，以下の特性があります。
   - 融点が従来の半田よりも約40℃高い。
     従来の半田こてをそのまま使用することは可能ですが，少し長めにこてを当てる必要があります。
     温度調節機能のついた半田こてを使用する場合，約350℃に設定して下さい。
     注意：半田こてを長く当てすぎると，基板のパターン（銅箔）がはがれてしまうことがありますので，注意して下さい。
   - 粘性が強い
     従来の半田よりも粘性が強いため，IC端子などが半田ブリッジしないように注意して下さい。
   - 従来の半田と混ぜて使用可能
     無鉛半田には無鉛半田を追加するのが最適ですが，従来の半田を追加しても構いません。

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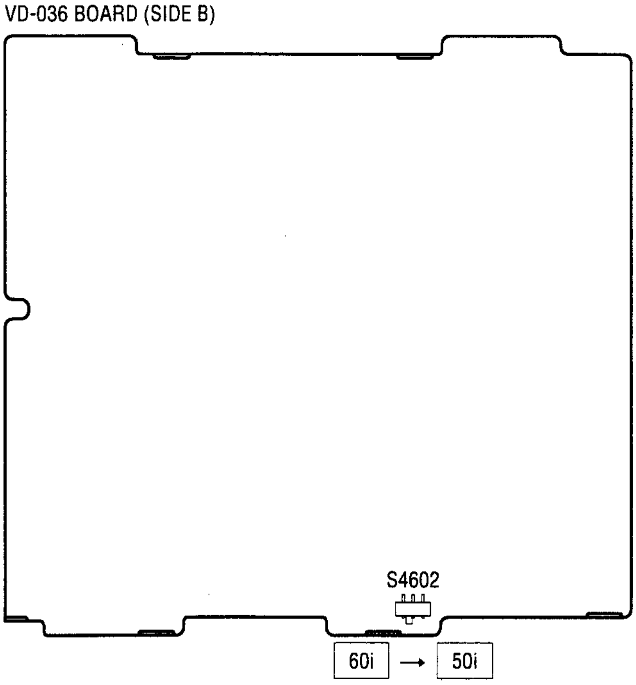
1. SERVICE NOTE

1-1. PRECAUTION ON REPLACING THE VD-036 BOARD

Set S4602 of the VD-036 board to the following position.

Switch setting
S4602 .... 60i (HVR-M25J/M25U/M25N)/50i (HVR-M25E/M25P/M25C)



1-2. SELF-DIAGNOSIS FUNCTION

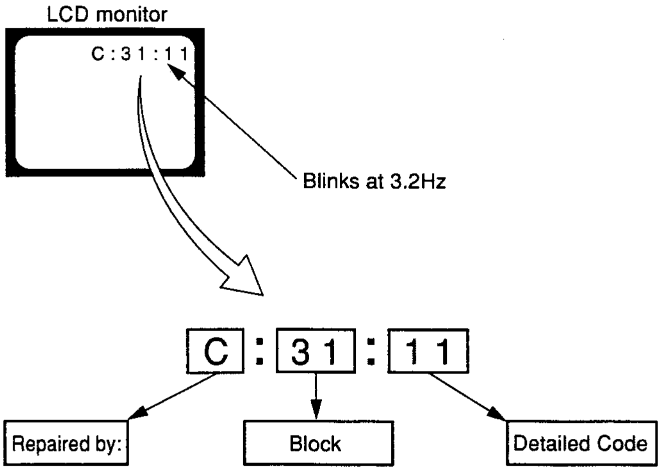
1-2-1. Self-diagnosis Function

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the LCD monitor what to do.

Details of the self-diagnosis functions are provided in the Instruction manual.

1-2-2. Self-diagnosis Display

When problems occur while the unit is operating, the time code of the LCD monitor shows a 4-digit display consisting of an alphabet and numbers, which blinks at 3.2 Hz. This 5-character display indicates the "repaired by:", "block" in which the problem occurred, and "detailed code" of the problem.



C : Corrected by customer
H : Corrected by dealer
E : Corrected by service engineer

Indicates the appropriate step to be taken.
E.g.
31 ....Reload the tape.
32 ....Turn on power again.

Refer to "1-2-3. Self-diagnosis Code Table".

1-2-3. Self-diagnosis Code Table

Self-diagnosis Code			Symptom/State	Correction
Repaired by:	Block Function	Detailed Code		
C	2 1	0 0	Condensation.	Remove the cassette, and insert it again after one hour.
C	2 2	0 0	Video head is dirty.	Clean with the optional cleaning cassette.
C	3 1	1 0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3 1	1 1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3 1	2 0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3 1	2 1	S reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3 1	2 2	T reel fault.	Load the tape again, and perform operations from the beginning.
C	3 1	2 3	S reel fault.	Load the tape again, and perform operations from the beginning.
C	3 1	3 0	FG fault when starting capstan.	Load the tape again, and perform operations from the beginning.
C	3 1	3 1	FG fault during normal capstan operations.	Load the tape again, and perform operations from the beginning.
C	3 1	4 0	FG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3 1	4 1	PG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3 1	4 2	FG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3 1	4 3	PG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3 1	4 4	Phase fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3 2	1 0	LOAD direction loading motor time-out.	Remove the power cable, connect, and perform operations from the beginning.
C	3 2	1 1	UNLOAD direction loading motor time-out.	Remove the power cable, connect, and perform operations from the beginning.
C	3 2	2 0	T reel side tape slacking when unloading.	Remove the power cable, connect, and perform operations from the beginning.
C	3 2	2 1	S reel side tape slacking when unloading.	Remove the power cable, connect, and perform operations from the beginning.
C	3 2	2 2	T reel fault.	Remove the power cable, connect, and perform operations from the beginning.
C	3 2	2 3	S reel fault.	Remove the power cable, connect, and perform operations from the beginning.
C	3 2	3 0	FG fault when starting capstan.	Remove the power cable, connect, and perform operations from the beginning.
C	3 2	3 1	FG fault during normal capstan operations.	Remove the power cable, connect, and perform operations from the beginning.
C	3 2	4 0	FG fault when starting drum.	Remove the power cable, connect, and perform operations from the beginning.
C	3 2	4 1	PG fault when starting drum.	Remove the power cable, connect, and perform operations from the beginning.
C	3 2	4 2	FG fault during normal drum operations.	Remove the power cable, connect, and perform operations from the beginning.
C	3 2	4 3	PG fault during normal drum operations.	Remove the power cable, connect, and perform operations from the beginning.
C	3 2	4 4	Phase fault during normal drum operations.	Remove the power cable, connect, and perform operations from the beginning.

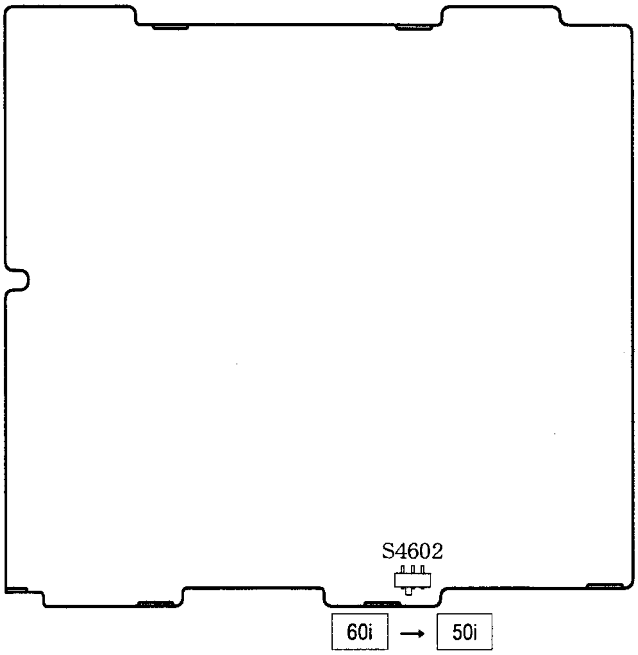
1. SERVICE NOTE

1-1.　VD-036基板交換時の注意

VD-036基板のS4602は，次のように設定してください。

スイッチ設定
S4602 .... 60i（HVR-M25J/M25U/M25N）/50i（HVR-M25E/M25P/M25C）

VD-036 BOARD (SIDE B)



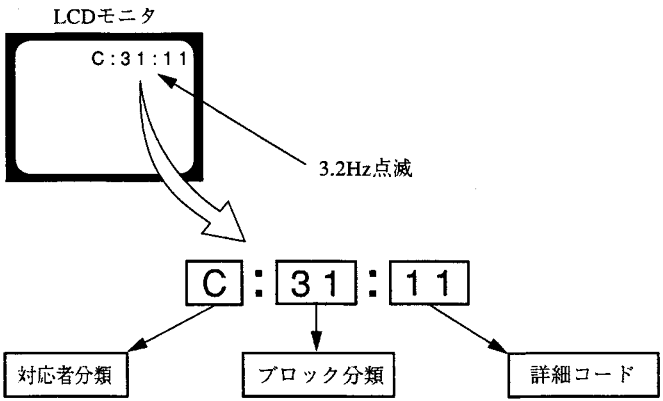
1-2.　自己診断機能

1-2-1. 自己診断機能について

本機の動作に不具合が生じたとき，自己診断機能が働き，LCDモニタに，どう処置したらよいか判断できる表示を行います。自己診断機能については取扱説明書にも掲載されています。

1-2-2. 自己診断表示

本機の動作に不具合が生じたとき，LCDモニタのタイムコード表示部分がアルファベットと数字の4桁表示になり，3.2Hzで点滅します。この5　文字の表示によって対応者分類および不具合の生じたブロックの分類，不具合の詳細コードを示します。



C ：お客さま自身で対応
H ：販売店で対応
E ：サービスエンジニア
　　で対応

対応方法の違いにより分類
例　31･･･テープを入れ直す
　　32･･･電源を入れ直す

「1-2-3. 自己診断コード表」
を参照

1-2-3. 自己診断コード表

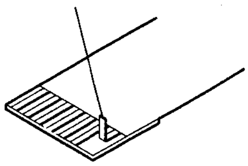
自己診断コード			症状／状態	対応／方法
対応者	ブロック機能	詳細コード		
C	2 1	0 0	結露している	カセットを取り出して，約1時間してからもう一度入れ直す
C	2 2	0 0	ビデオヘッドが汚れている	別売のクリーニングカセットできれいにする
C	3 1	1 0	LOAD方向，ローディング所定時間内終了せず	テープを入れ直し，再度操作し直す
C	3 1	1 1	UNLOAD方向，ローディング所定時間内終了せず	テープを入れ直し，再度操作し直す
C	3 1	2 0	UNLOAD時，Tリール側テープ弛み	テープを入れ直し，再度操作し直す
C	3 1	2 1	UNLOAD時，Sリール側テープ弛み	テープを入れ直し，再度操作し直す
C	3 1	2 2	Tリール異常	テープを入れ直し，再度操作し直す
C	3 1	2 3	Sリール異常	テープを入れ直し，再度操作し直す
C	3 1	3 0	キャプスタン起動時FG異常	テープを入れ直し，再度操作し直す
C	3 1	3 1	キャプスタン定常時FG異常	テープを入れ直し，再度操作し直す
C	3 1	4 0	ドラム起動時FG異常	テープを入れ直し，再度操作し直す
C	3 1	4 1	ドラム起動時PG異常	テープを入れ直し，再度操作し直す
C	3 1	4 2	ドラム定常時FG異常	テープを入れ直し，再度操作し直す
C	3 1	4 3	ドラム定常時PG異常	テープを入れ直し，再度操作し直す
C	3 1	4 4	ドラム定常時位相異常	テープを入れ直し，再度操作し直す
C	3 2	1 0	LOAD方向，ローディング所定時間内終了せず	電源ケーブルを外して付け直し,再度操作し直す
C	3 2	1 1	UNLOAD方向，ローディング所定時間内終了せず	電源ケーブルを外して付け直し,再度操作し直す
C	3 2	2 0	UNLOAD時，Tリール側テープ弛み	電源ケーブルを外して付け直し,再度操作し直す
C	3 2	2 1	UNLOAD時，Sリール側テープ弛み	電源ケーブルを外して付け直し,再度操作し直す
C	3 2	2 2	Tリール異常	電源ケーブルを外して付け直し,再度操作し直す
C	3 2	2 3	Sリール異常	電源ケーブルを外して付け直し,再度操作し直す
C	3 2	3 0	キャプスタン起動時FG異常	電源ケーブルを外して付け直し,再度操作し直す
C	3 2	3 1	キャプスタン定常時FG異常	電源ケーブルを外して付け直し,再度操作し直す
C	3 2	4 0	ドラム起動時FG異常	電源ケーブルを外して付け直し,再度操作し直す
C	3 2	4 1	ドラム起動時PG異常	電源ケーブルを外して付け直し,再度操作し直す
C	3 2	4 2	ドラム定常時FG異常	電源ケーブルを外して付け直し,再度操作し直す
C	3 2	4 3	ドラム定常時PG異常	電源ケーブルを外して付け直し,再度操作し直す
C	3 2	4 4	ドラム定常時位相異常	電源ケーブルを外して付け直し,再度操作し直す

2. DISASSEMBLY

NOTE FOR REPAIR

- Make sure that the flat cable and flexible board are not cracked of bent at the terminal.
  Do not insert the cable insufficiently nor crookedly.
- When remove a connector, dont' pull at wire of connector. It is possible that a wire is snapped.
- When installing a connector, dont' press down at wire of connector.
  It is possible that a wire is snapped.

Cut and remove the part of gilt which comes off at the point.
(Be careful or some pieces of gilt may be left inside)



HELP

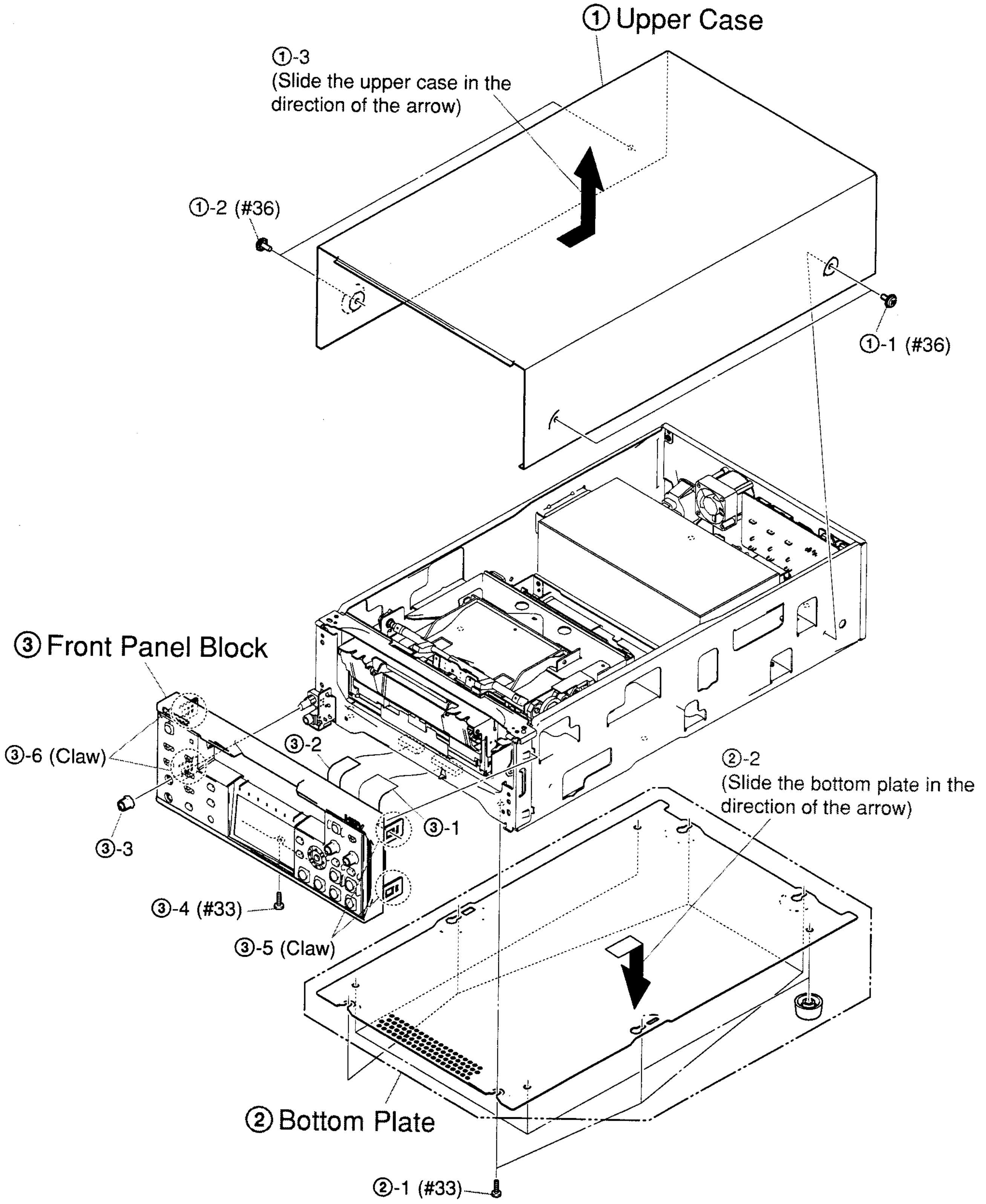
EXPLODED VIEW HARDWARE LIST

2-1. DISASSEMBLY

2-1-1. OVERALL ASSEMBLY

Follow the disassembly in the numerical order given.

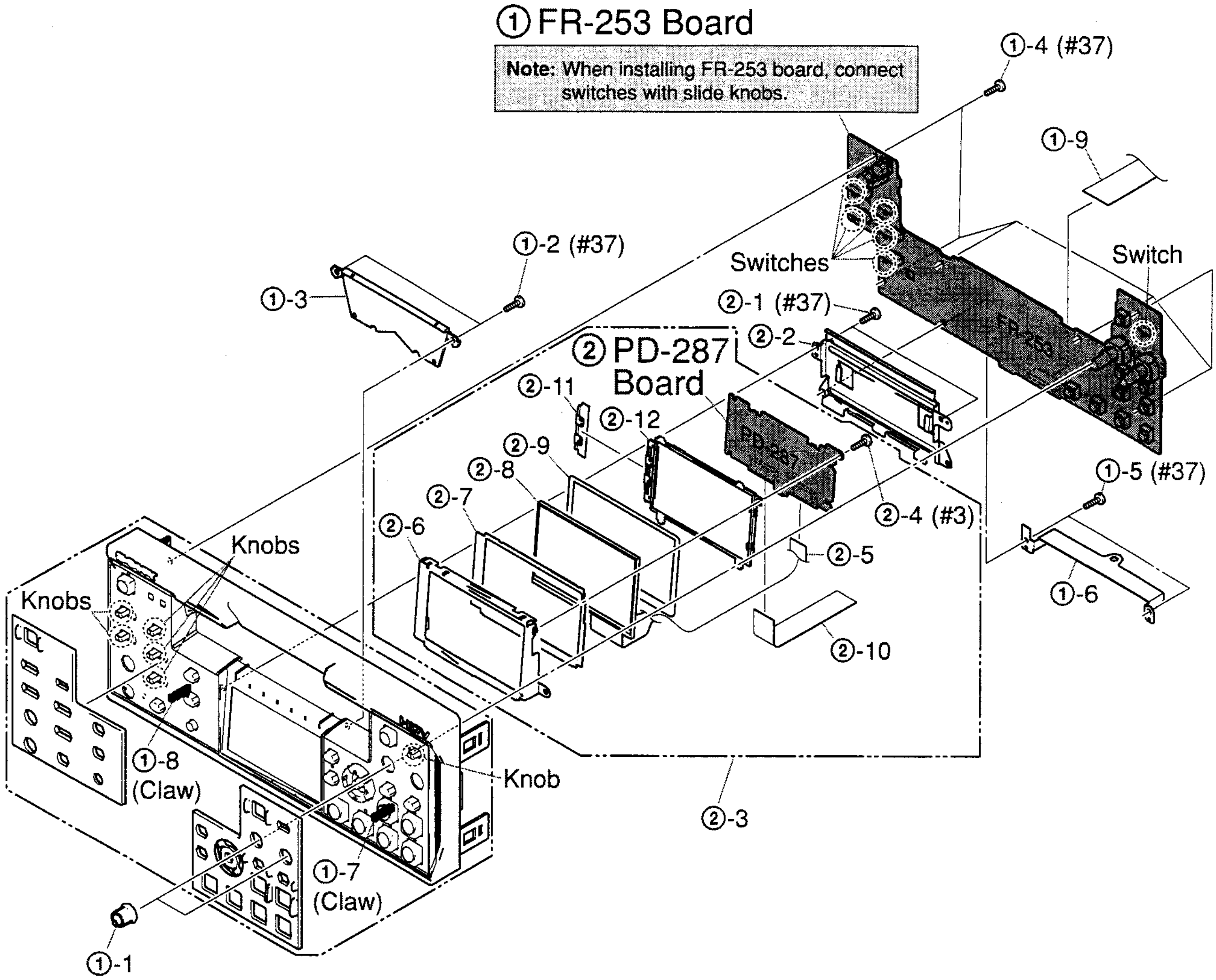
① Upper Case (①-1 to ①-3)
② Bottom Plate (②-1 to ②-2)
③ Front Panel Block (③-1 to ③-6)


① Upper Case
①-3
(Slide the upper case in the direction of the arrow)
①-2 (#36)
①-1 (#36)
③ Front Panel Block
③-6 (Claw)
③-2
③-1
③-3
③-4 (#33)
③-5 (Claw)
②-2
(Slide the bottom plate in the direction of the arrow)
② Bottom Plate
②-1 (#33)

2-1-2. FRONT PANEL BLOCK

EXPLODED VIEW HARDWARE LIST

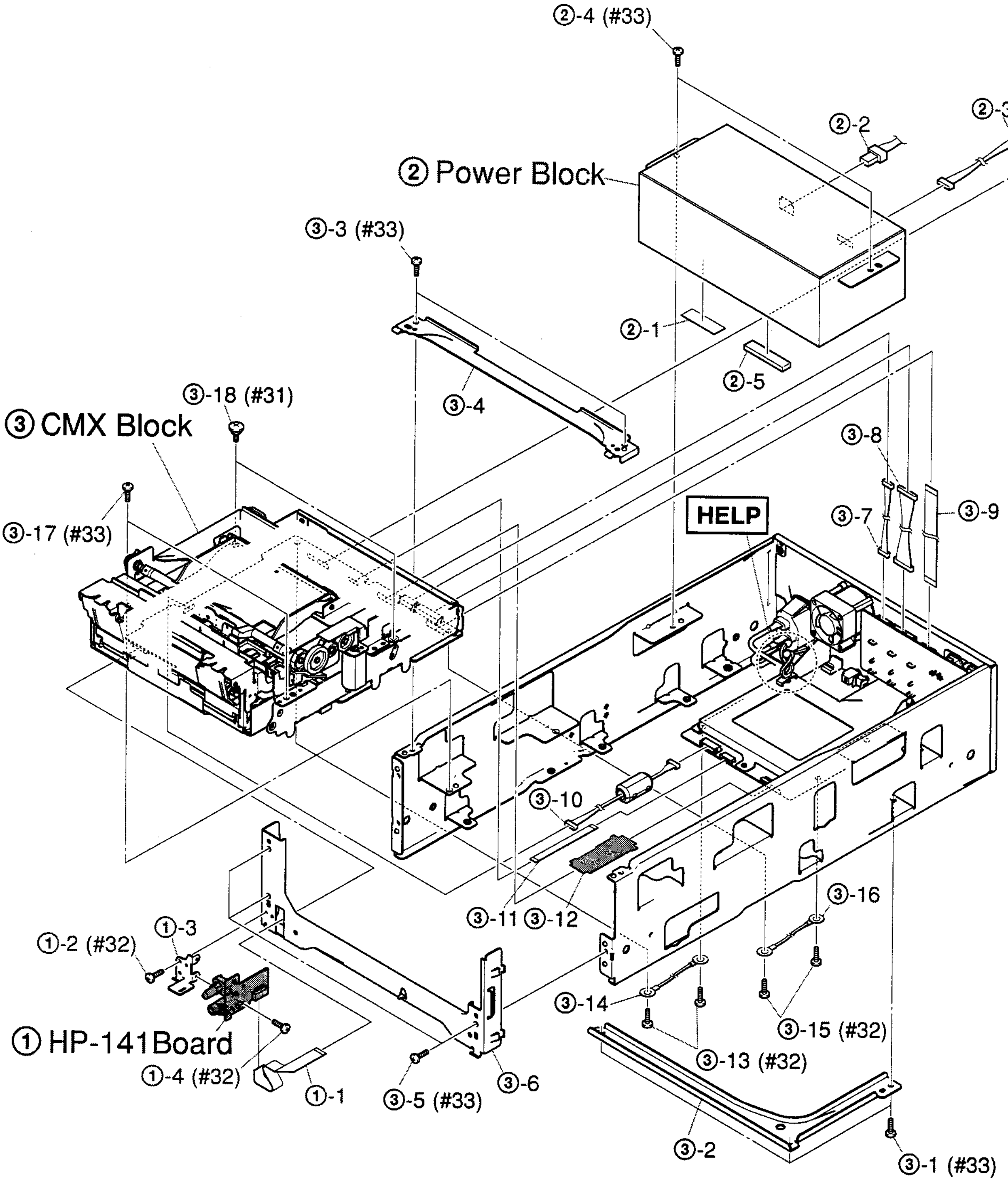
Follow the disassembly in the numerical order given.
① FR-253 Board (①-1 to ①-9)
② PD-287 Board (②-1 to ②-12)


① FR-253 Board
Note: When installing FR-253 board, connect switches with slide knobs.
①-4 (#37)
①-9
Switches
Switch
①-2 (#37)
①-3
②-1 (#37)
②-2
② PD-287 Board
②-11
②-12
②-9
②-8
②-7
②-6
②-4 (#3)
②-5
①-5 (#37)
①-6
②-10
Knobs
Knobs
①-8 (Claw)
Knob
②-3
①-7 (Claw)
①-1

2-1-3. CHASSIS BLOCK

EXPLODED VIEW HARDWARE LIST

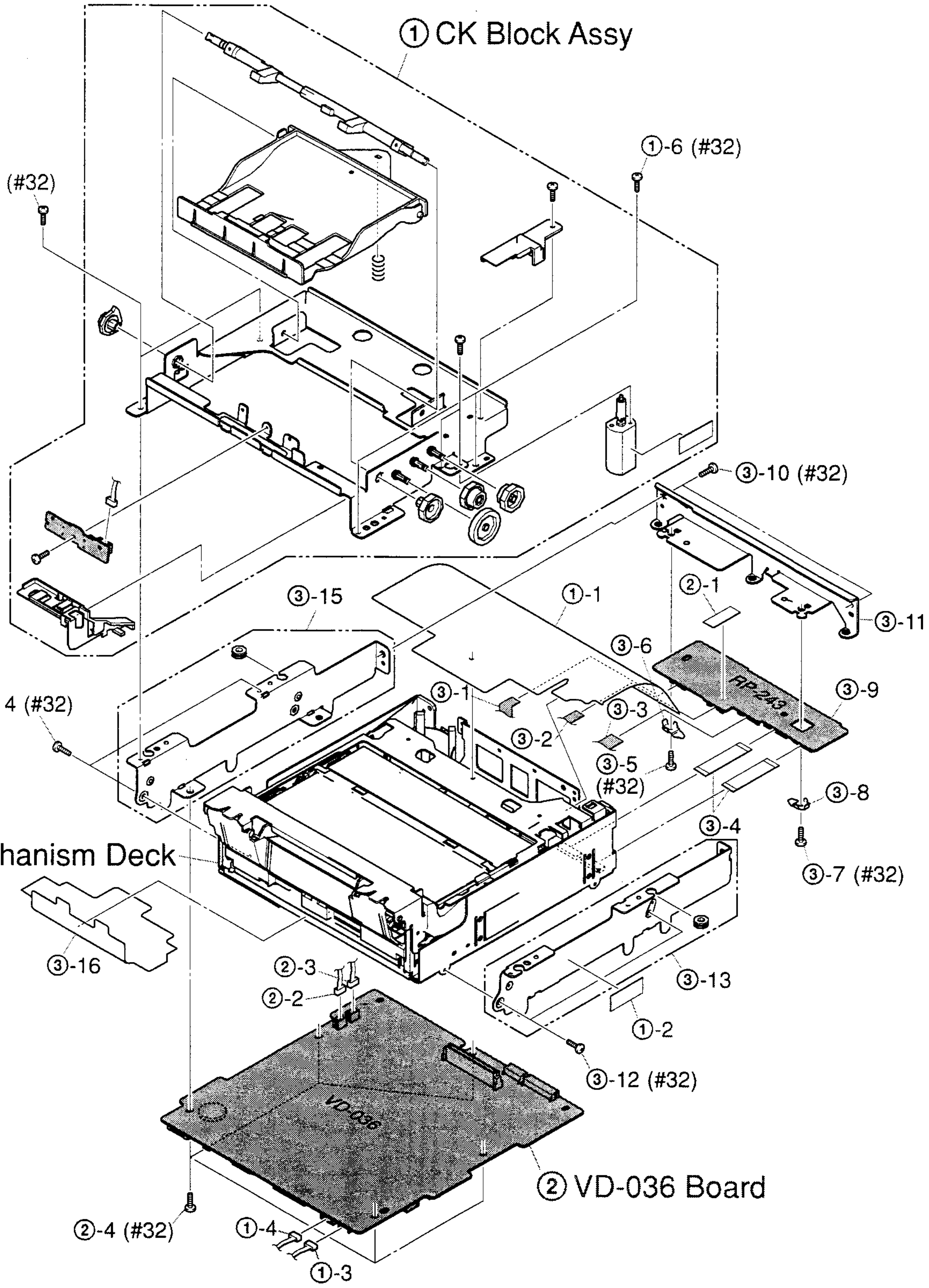
Follow the disassembly in the numerical order given.
① HP-141 Board (①-1 to ①-4)
② Power Block (②-1 to ②-5)
③ CMX Block (③-1 to ③-18)


②-4 (#33)
②-2
②-3
② Power Block
③-3 (#33)
②-1
②-5
③-18 (#31)
③ CMX Block
③-4
③-8
③-17 (#33)
HELP
③-7
③-9
③-10
③-16
③-11
③-12
①-2 (#32)
①-3
③-14
③-15 (#32)
① HP-141Board
③-13 (#32)
①-4 (#32)
①-1
③-5 (#33)
③-6
③-2
③-1 (#33)

2-1-4. CMX BLOCK

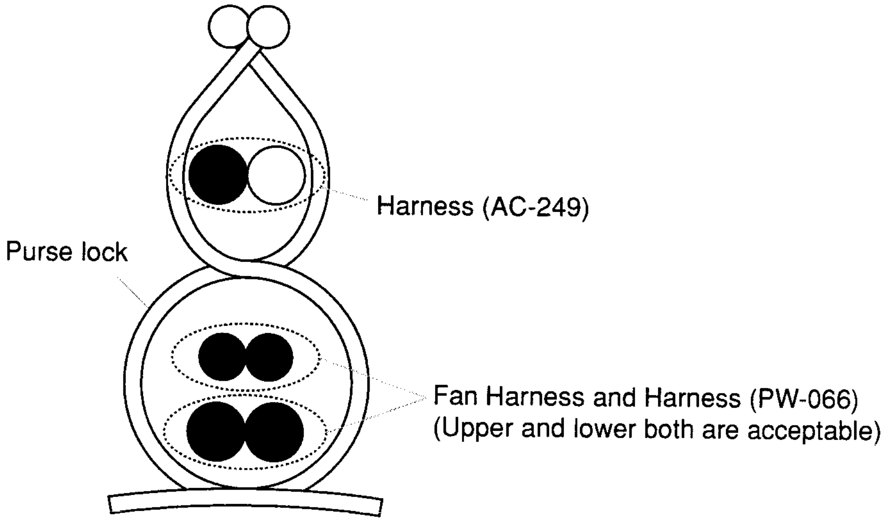
EXPLODED VIEW HARDWARE LIST

Follow the disassembly in the numerical order given.
① CK BLOCK ASSY (①-1 to ①-6)
② VD-036 Board (②-1 to ②-4)
③ Mechanism Deck (③-1 to ③-16)


① CK Block Assy
①-6 (#32)
①-5 (#32)
③-10 (#32)
③-15
①-1
②-1
③-11
③-6
③-9
③-14 (#32)
③-1
③-3
③-2
③-5
(#32)
③-8
③-4
③ Mechanism Deck
③-7 (#32)
RP-243
③-16
②-3
③-13
②-2
①-2
③-12 (#32)
VD-036
② VD-036 Board
②-4 (#32)
①-4
①-3

HELP

Sheet attachment positions and procedures of processing the flexible boards/harnesses are shown.


Harness (AC-249)
Purse lock
Fan Harness and Harness (PW-066)
(Upper and lower both are acceptable)

*Install it to be away of harness (AC-249) and harness (PW-066)

3. BLOCK DIAGRAMS

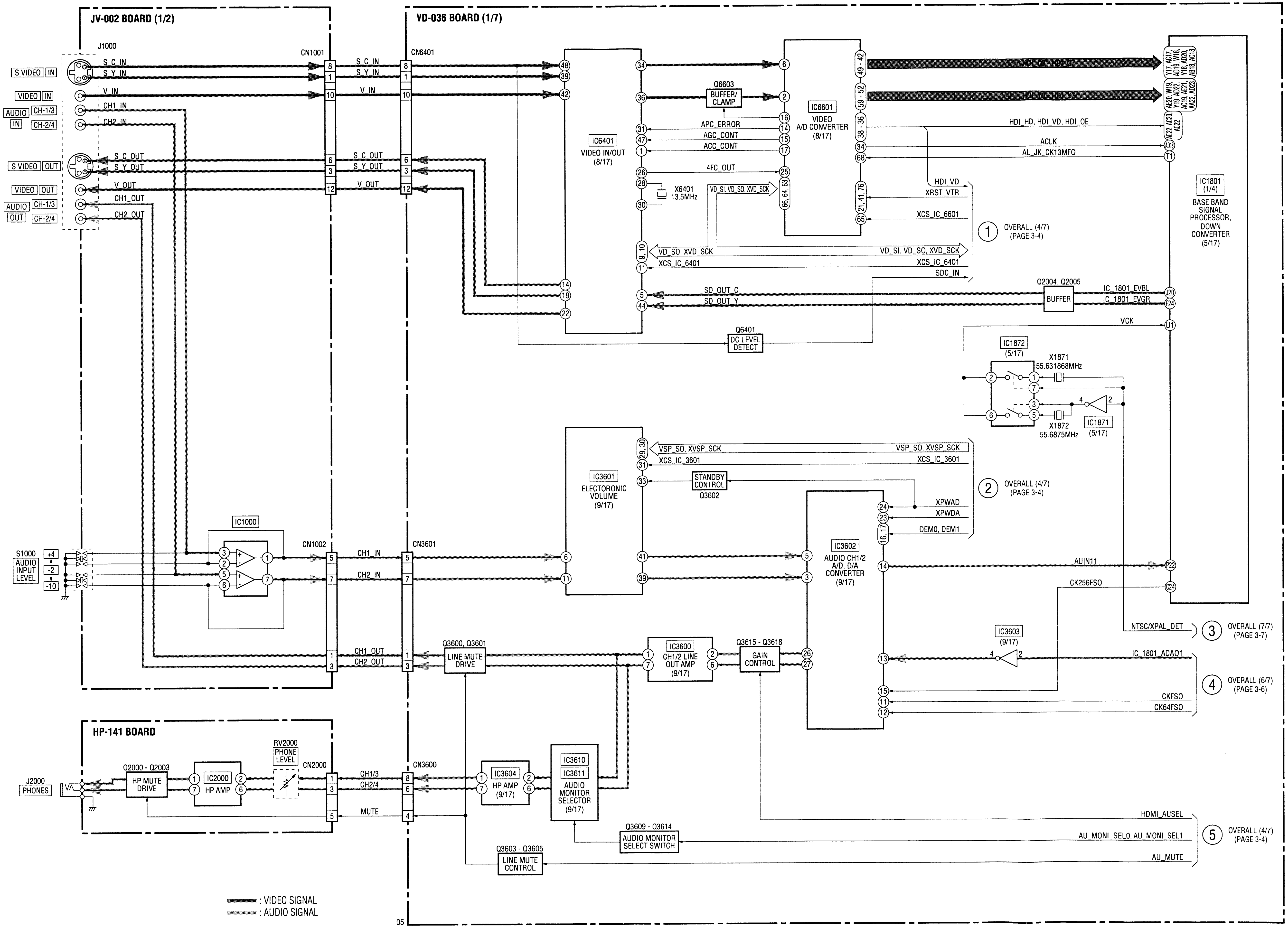
Link

OVERALL BLOCK DIAGRAM (1/7)	OVERALL BLOCK DIAGRAM (6/7)
OVERALL BLOCK DIAGRAM (2/7)	OVERALL BLOCK DIAGRAM (7/7)
OVERALL BLOCK DIAGRAM (3/7)	POWER BLOCK DIAGRAM (1/3)
OVERALL BLOCK DIAGRAM (4/7)	POWER BLOCK DIAGRAM (2/3)
OVERALL BLOCK DIAGRAM (5/7)	POWER BLOCK DIAGRAM (3/3)

3. BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM (1/7)

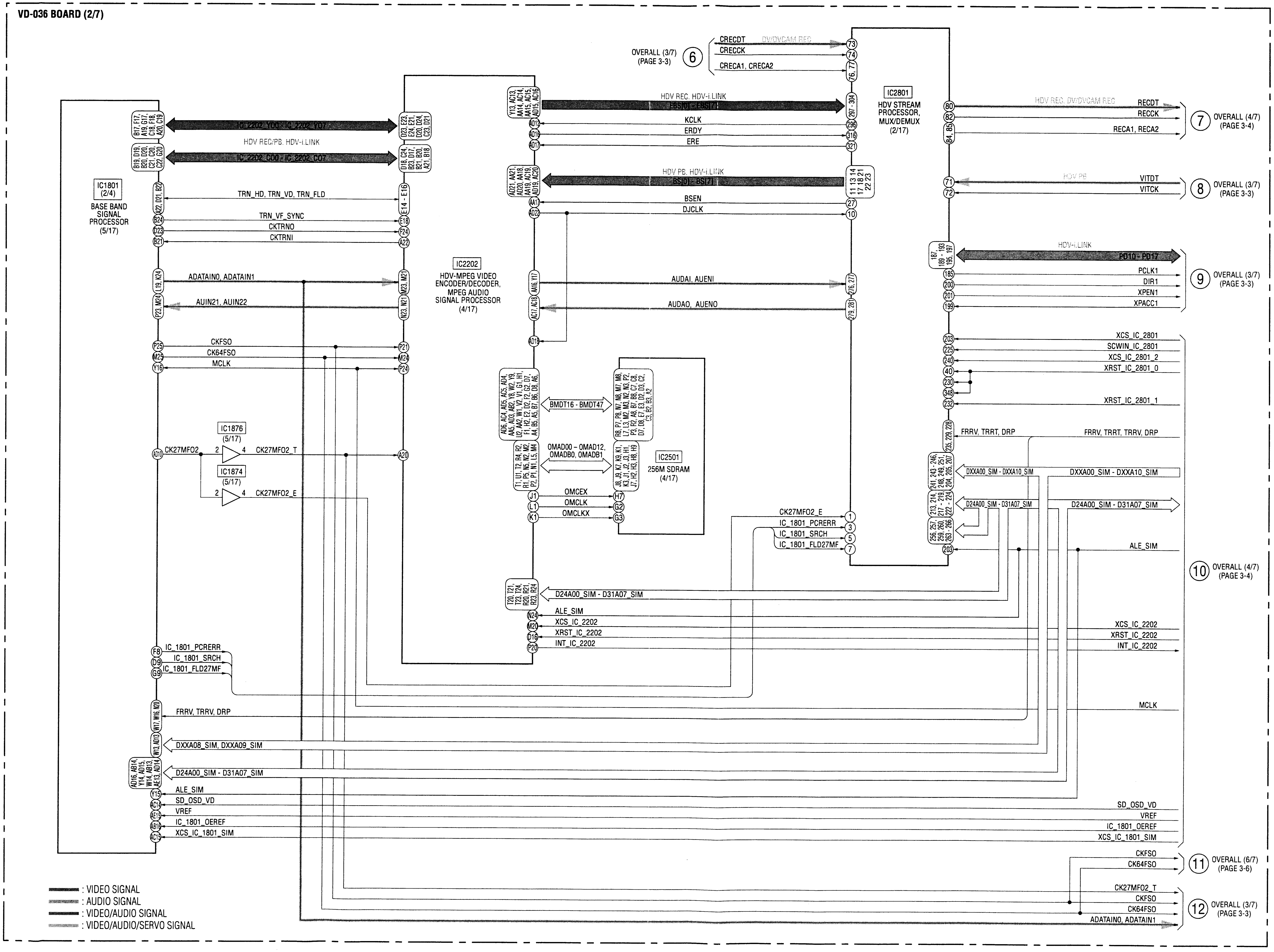
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



JV-002 BOARD (1/2)
VD-036 BOARD (1/7)
HP-141 BOARD
J1000
CN1001
CN6401
CN1002
CN3601
CN2000
CN3600
S VIDEO IN
VIDEO IN
AUDIO IN CH-1/3
CH-2/4
S VIDEO OUT
VIDEO OUT
AUDIO OUT CH-1/3
CH-2/4
S_C_IN
S_Y_IN
V_IN
CH1_IN
CH2_IN
S_C_OUT
S_Y_OUT
V_OUT
CH1_OUT
CH2_OUT
IC6401 VIDEO IN/OUT (8/17)
Q6603 BUFFER/ CLAMP
IC6601 VIDEO A/D CONVERTER (8/17)
APC_ERROR
AGC_CONT
ACC_CONT
4FC_OUT
X6401 13.5MHz
VD_SI, VD_SO, XVD_SCK
VD_SO, XVD_SCK
XCS_IC_6401
SDC_IN
SD_OUT_C
SD_OUT_Y
Q6401 DC LEVEL DETECT
HDI_C0 - HDI_C7
HDI_Y0 - HDI_Y7
HDI_HD, HDI_VD, HDI_OE
ACLK
AL_JK_CK13MFO
HDI_VD
XRST_VTR
XCS_IC_6601
OVERALL (4/7) (PAGE 3-4)
IC1801 (1/4) BASE BAND SIGNAL PROCESSOR, DOWN CONVERTER (5/17)
Q2004, Q2005 BUFFER
IC_1801_EVBL
IC_1801_EVGR
VCK
IC1872 (5/17)
X1871 55.631868MHz
X1872 55.6875MHz
IC1871 (5/17)
IC3601 ELECTORONIC VOLUME (9/17)
VSP_SO, XVSP_SCK
XCS_IC_3601
STANDBY CONTROL Q3602
XPWAD
XPWDA
DEMO, DEM1
IC3602 AUDIO CH1/2 A/D, D/A CONVERTER (9/17)
AUIN11
CK256FSO
S1000 AUDIO INPUT LEVEL +4 -2 -10
IC1000
NTSC/XPAL_DET
OVERALL (7/7) (PAGE 3-7)
IC3603 (9/17)
IC_1801_ADAO1
OVERALL (6/7) (PAGE 3-6)
CKFSO
CK64FSO
Q3600, Q3601 LINE MUTE DRIVE
IC3600 CH1/2 LINE OUT AMP (9/17)
Q3615 - Q3618 GAIN CONTROL
J2000 PHONES
Q2000 - Q2003 HP MUTE DRIVE
IC2000 HP AMP
RV2000 PHONE LEVEL
CH1/3
CH2/4
MUTE
IC3604 HP AMP (9/17)
IC3610 IC3611 AUDIO MONITOR SELECTOR (9/17)
Q3609 - Q3614 AUDIO MONITOR SELECT SWITCH
Q3603 - Q3605 LINE MUTE CONTROL
HDMI_AUSEL
AU_MONI_SEL0, AU_MONI_SEL1
AU_MUTE
OVERALL (4/7) (PAGE 3-4)
: VIDEO SIGNAL
: AUDIO SIGNAL
05

3-2. OVERALL BLOCK DIAGRAM (2/7)

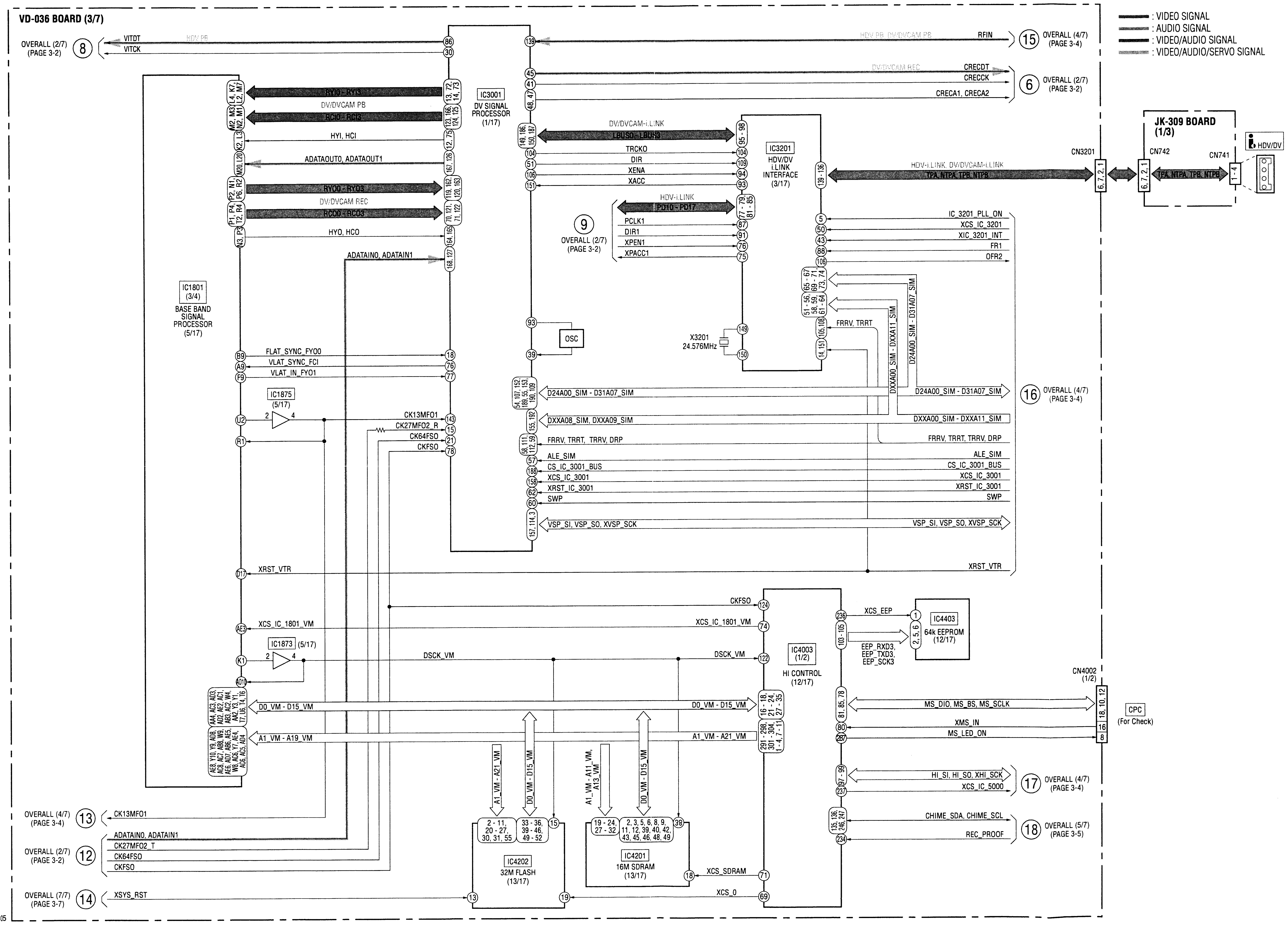
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



VD-036 BOARD (2/7)
IC1801 (2/4)
BASE BAND SIGNAL PROCESSOR (5/17)
IC2202
HDV-MPEG VIDEO ENCODER/DECODER, MPEG AUDIO SIGNAL PROCESSOR (4/17)
IC2801
HDV STREAM PROCESSOR, MUX/DEMUX (2/17)
IC2501
256M SDRAM (4/17)
IC1876 (5/17)
IC1874 (5/17)
IC_2202_Y00 - IC_2202_Y07
HDV REC/PB, HDV-i.LINK
IC_2202_C00 - IC_2202_C07
TRN_HD, TRN_VD, TRN_FLD
TRN_VF_SYNC
CKTRNO
CKTRNI
ADATAIN0, ADATAIN1
AUIN21, AUIN22
CKFSO
CK64FSO
MCLK
CK27MFO2
CK27MFO2_T
CK27MFO2_E
IC_1801_PCRERR
IC_1801_SRCH
IC_1801_FLD27MF
FRRV, TRRV, DRP
DXXA08_SIM, DXXA09_SIM
D24A00_SIM - D31A07_SIM
ALE_SIM
SD_OSD_VD
VREF
IC_1801_OEREF
XCS_IC_1801_SIM
OVERALL (3/7) (PAGE 3-3) ⑥
CRECDT
DV/DVCAM REC
CRECCK
CRECA1, CRECA2
HDV REC, HDV-i.LINK
BS[0] - BS[7]
KCLK
ERDY
ERE
HDV PB, HDV-i.LINK
BSEN
DJCLK
AUDAI, AUENI
AUDAO, AUENO
BMDT16 - BMDT47
OMAD00 - OMAD12, OMADB0, OMADB1
OMCEX
OMCLK
OMCLKX
D24A00_SIM - D31A07_SIM
ALE_SIM
XCS_IC_2202
XRST_IC_2202
INT_IC_2202
CK27MFO2_E
IC_1801_PCRERR
IC_1801_SRCH
IC_1801_FLD27MF
HDV REC, DV/DVCAM REC
RECDT
RECCK
RECA1, RECA2
OVERALL (4/7) (PAGE 3-4) ⑦
HDV PB
VITDT
VITCK
OVERALL (3/7) (PAGE 3-3) ⑧
HDV-i.LINK
PD10 - PD17
PCLK1
DIR1
XPEN1
XPACC1
OVERALL (3/7) (PAGE 3-3) ⑨
XCS_IC_2801
SCWIN_IC_2801
XCS_IC_2801_2
XRST_IC_2801_0
XRST_IC_2801_1
FRRV, TRRT, DRP
FRRV, TRRT, TRRV, DRP
DXXA00_SIM - DXXA10_SIM
D24A00_SIM - D31A07_SIM
ALE_SIM
OVERALL (4/7) (PAGE 3-4) ⑩
XCS_IC_2202
XRST_IC_2202
INT_IC_2202
MCLK
SD_OSD_VD
VREF
IC_1801_OEREF
XCS_IC_1801_SIM
CKFSO
CK64FSO
OVERALL (6/7) (PAGE 3-6) ⑪
CK27MFO2_T
CKFSO
CK64FSO
ADATAIN0, ADATAIN1
OVERALL (3/7) (PAGE 3-3) ⑫
: VIDEO SIGNAL
: AUDIO SIGNAL
: VIDEO/AUDIO SIGNAL
: VIDEO/AUDIO/SERVO SIGNAL
05

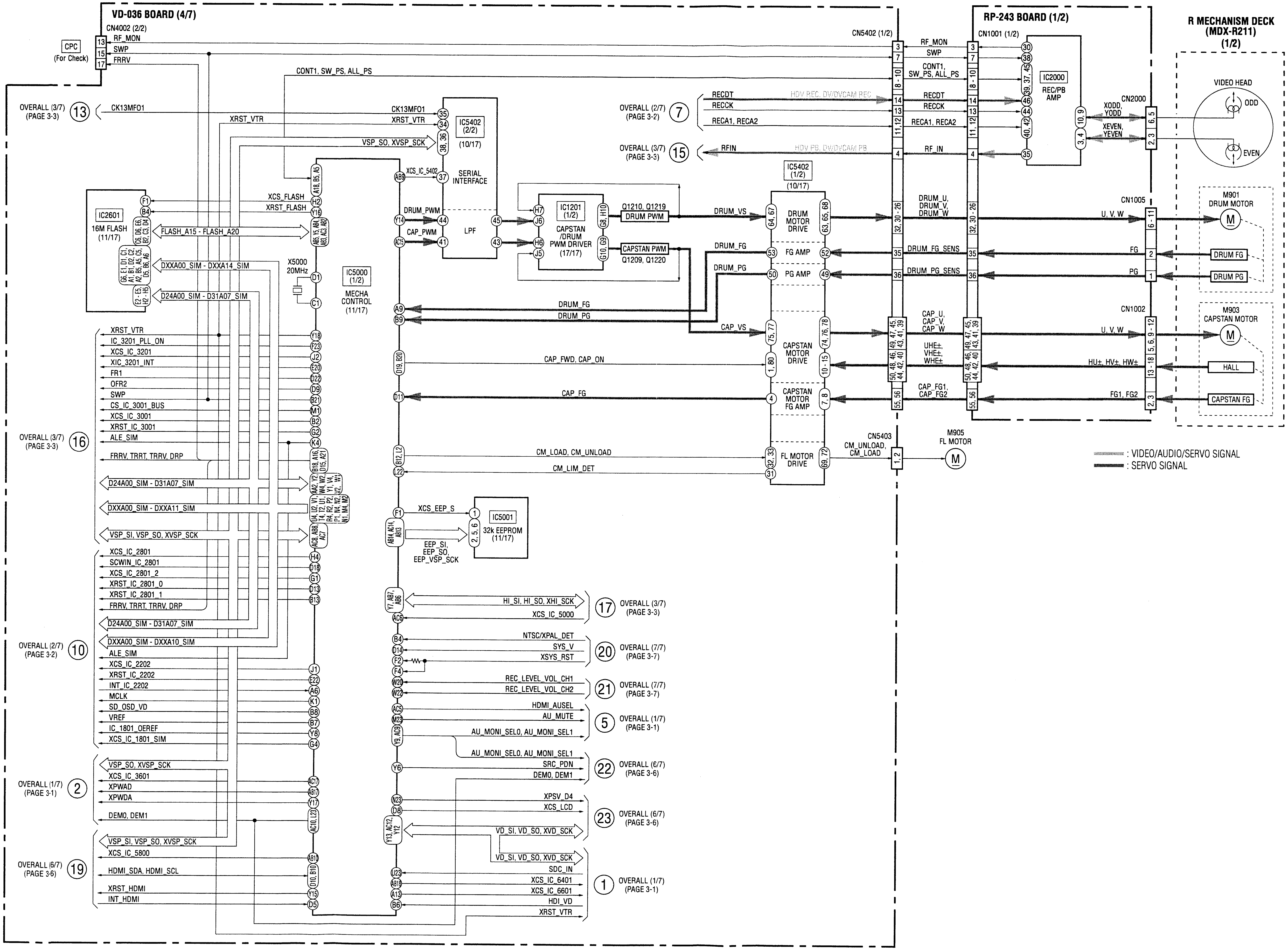
3-3. OVERALL BLOCK DIAGRAM (3/7)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.


: VIDEO SIGNAL
: AUDIO SIGNAL
: VIDEO/AUDIO SIGNAL
: VIDEO/AUDIO/SERVO SIGNAL
VD-036 BOARD (3/7)
OVERALL (2/7) (PAGE 3-2) 8
VITDT
VITCK
HDV PB
IC3001 DV SIGNAL PROCESSOR (1/17)
RFIN
HDV PB, DV/DVCAM PB
OVERALL (4/7) (PAGE 3-4) 15
DV/DVCAM REC
CRECDT
CRECCK
CRECA1, CRECA2
OVERALL (2/7) (PAGE 3-2) 6
RYI0 - RYI3
DV/DVCAM PB
RCI0 - RCI3
HYI, HCI
ADATAOUT0, ADATAOUT1
RYO0 - RYO3
DV/DVCAM REC
RCO0 - RCO3
HYO, HCO
ADATAIN0, ADATAIN1
DV/DVCAM-i.LINK
LBUS0 - LBUS3
TRCKO
DIR
XENA
XACC
IC3201 HDV/DV i.LINK INTERFACE (3/17)
HDV-i.LINK
PD10 - PD17
OVERALL (2/7) (PAGE 3-2) 9
PCLK1
DIR1
XPEN1
XPACC1
HDV-i.LINK, DV/DVCAM-i.LINK
TPA, NTPA, TPB, NTPB
CN3201
JK-309 BOARD (1/3)
CN742
CN741
HDV/DV
IC_3201_PLL_ON
XCS_IC_3201
XIC_3201_INT
FR1
OFR2
FRRV, TRRT
X3201 24.576MHz
OSC
IC1801 (3/4) BASE BAND SIGNAL PROCESSOR (5/17)
FLAT_SYNC_FYO0
VLAT_SYNC_FCI
VLAT_IN_FYO1
IC1875 (5/17)
CK13MFO1
CK27MFO2_R
CK64FSO
CKFSO
D24A00_SIM - D31A07_SIM
DXXA00_SIM - DXXA11_SIM
DXXA08_SIM, DXXA09_SIM
OVERALL (4/7) (PAGE 3-4) 16
FRRV, TRRT, TRRV, DRP
ALE_SIM
CS_IC_3001_BUS
XCS_IC_3001
XRST_IC_3001
SWP
VSP_SI, VSP_SO, XVSP_SCK
XRST_VTR
CKFSO
XCS_IC_1801_VM
IC1873 (5/17)
DSCK_VM
IC4003 (1/2) HI CONTROL (12/17)
XCS_EEP
IC4403 64k EEPROM (12/17)
EEP_RXD3, EEP_TXD3, EEP_SCK3
D0_VM - D15_VM
A1_VM - A19_VM
A1_VM - A21_VM
A1_VM - A11_VM, A13_VM
CN4002 (1/2)
MS_DIO, MS_BS, MS_SCLK
XMS_IN
MS_LED_ON
CPC (For Check)
HI_SI, HI_SO, XHI_SCK
XCS_IC_5000
OVERALL (4/7) (PAGE 3-4) 17
CHIME_SDA, CHIME_SCL
REC_PROOF
OVERALL (5/7) (PAGE 3-5) 18
OVERALL (4/7) (PAGE 3-4) 13
CK13MFO1
OVERALL (2/7) (PAGE 3-2) 12
ADATAIN0, ADATAIN1
CK27MFO2_T
CK64FSO
CKFSO
OVERALL (7/7) (PAGE 3-7) 14
XSYS_RST
IC4202 32M FLASH (13/17)
IC4201 16M SDRAM (13/17)
XCS_SDRAM
XCS_0
05

3-4. OVERALL BLOCK DIAGRAM (4/7)

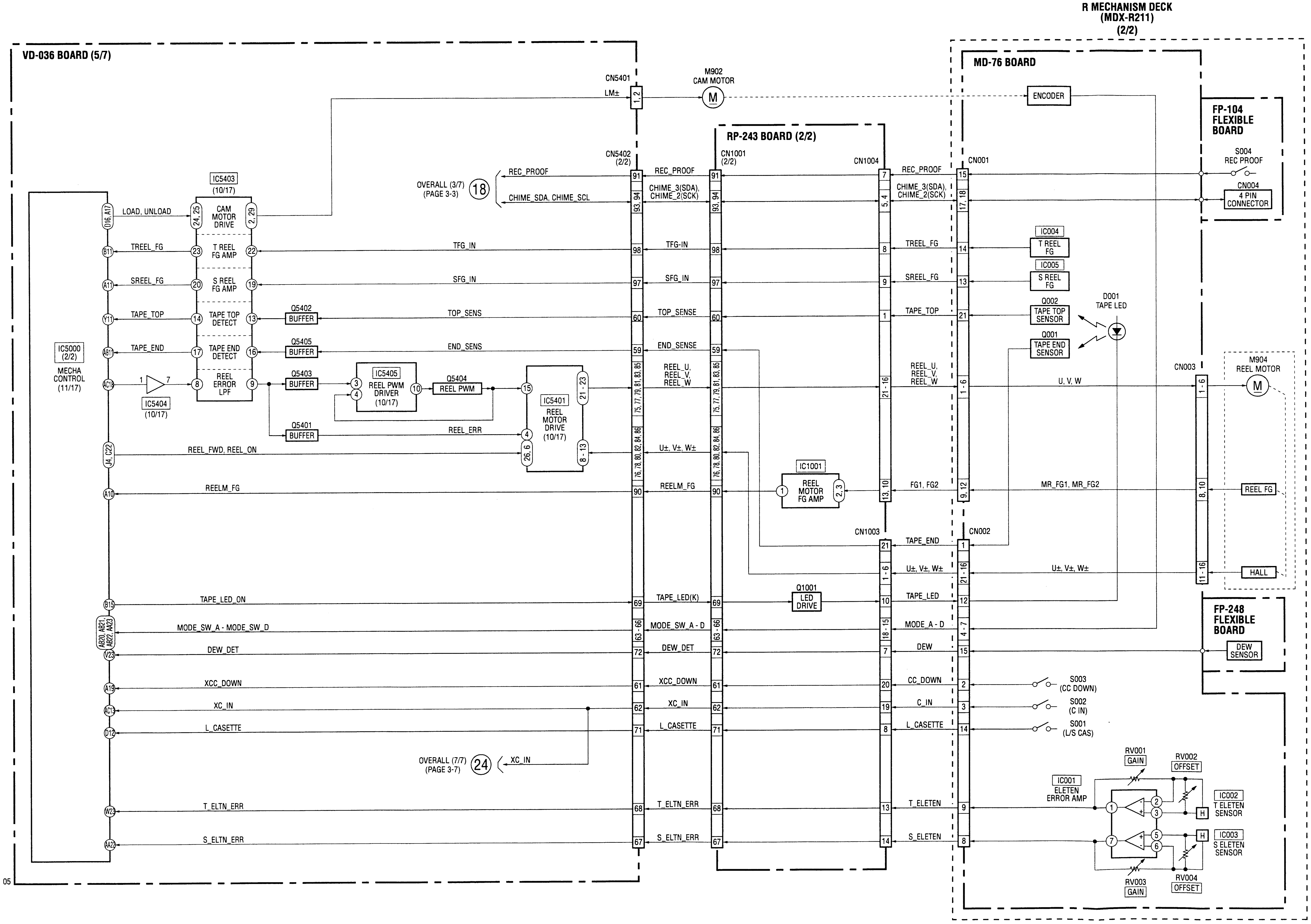
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



VD-036 BOARD (4/7)
CN4002 (2/2)
RF_MON
SWP
FRRV
CPC
(For Check)
CONT1, SW_PS, ALL_PS
OVERALL (3/7) (PAGE 3-3) ⑬
CK13MFO1
XRST_VTR
VSP_SO, XVSP_SCK
IC5402 (2/2) (10/17)
SERIAL INTERFACE
XCS_IC_5402
DRUM_PWM
CAP_PWM
LPF
IC2601
16M FLASH (11/17)
XCS_FLASH
XRST_FLASH
FLASH_A15 - FLASH_A20
DXXA00_SIM - DXXA14_SIM
D24A00_SIM - D31A07_SIM
X5000 20MHz
IC5000 (1/2)
MECHA CONTROL (11/17)
IC1201 (1/2)
CAPSTAN /DRUM PWM DRIVER (17/17)
Q1210, Q1219
DRUM PWM
CAPSTAN PWM
Q1209, Q1220
OVERALL (2/7) (PAGE 3-2) ⑦
RECDT
RECCK
RECA1, RECA2
HDV REC, DV/DVCAM REC
OVERALL (3/7) (PAGE 3-3) ⑮
RFIN
HDV PB, DV/DVCAM PB
IC5402 (1/2) (10/17)
DRUM_VS
DRUM MOTOR DRIVE
DRUM_FG
FG AMP
DRUM_PG
PG AMP
CAP_VS
CAPSTAN MOTOR DRIVE
CAP_FWD, CAP_ON
CAP_FG
CAPSTAN MOTOR FG AMP
CM_LOAD, CM_UNLOAD
CM_LIM_DET
FL MOTOR DRIVE
CN5403
CM_UNLOAD, CM_LOAD
M905 FL MOTOR
XCS_EEP_S
IC5001
32k EEPROM (11/17)
EEP_SI, EEP_SO, EEP_VSP_SCK
CN5402 (1/2)
RP-243 BOARD (1/2)
CN1001 (1/2)
RF_MON
SWP
CONT1, SW_PS, ALL_PS
RECDT
RECCK
RECA1, RECA2
RF_IN
IC2000
REC/PB AMP
CN2000
XODD, YODD
XEVEN, YEVEN
DRUM_U, DRUM_V, DRUM_W
DRUM_FG_SENS
DRUM_PG_SENS
CN1005
U, V, W
FG
PG
CAP_U, CAP_V, CAP_W
UHE±, VHE±, WHE±
CAP_FG1, CAP_FG2
CN1002
HU±, HV±, HW±
FG1, FG2
R MECHANISM DECK (MDX-R211) (1/2)
VIDEO HEAD
ODD
EVEN
M901 DRUM MOTOR
DRUM FG
DRUM PG
M903 CAPSTAN MOTOR
HALL
CAPSTAN FG
XRST_VTR
IC_3201_PLL_ON
XCS_IC_3201
XIC_3201_INT
FR1
OFR2
SWP
CS_IC_3001_BUS
XCS_IC_3001
XRST_IC_3001
ALE_SIM
OVERALL (3/7) (PAGE 3-3) ⑯
FRRV, TRRT, TRRV, DRP
D24A00_SIM - D31A07_SIM
DXXA00_SIM - DXXA11_SIM
VSP_SI, VSP_SO, XVSP_SCK
XCS_IC_2801
SCWIN_IC_2801
XCS_IC_2801_2
XRST_IC_2801_0
XRST_IC_2801_1
FRRV, TRRT, TRRV, DRP
D24A00_SIM - D31A07_SIM
DXXA00_SIM - DXXA10_SIM
OVERALL (2/7) (PAGE 3-2) ⑩
ALE_SIM
XCS_IC_2202
XRST_IC_2202
INT_IC_2202
MCLK
SD_OSD_VD
VREF
IC_1801_OEREF
XCS_IC_1801_SIM
VSP_SO, XVSP_SCK
XCS_IC_3601
OVERALL (1/7) (PAGE 3-1) ②
XPWAD
XPWDA
DEMO, DEM1
VSP_SI, VSP_SO, XVSP_SCK
XCS_IC_5800
OVERALL (6/7) (PAGE 3-6) ⑲
HDMI_SDA, HDMI_SCL
XRST_HDMI
INT_HDMI
HI_SI, HI_SO, XHI_SCK
XCS_IC_5000
⑰ OVERALL (3/7) (PAGE 3-3)
NTSC/XPAL_DET
SYS_V
XSYS_RST
⑳ OVERALL (7/7) (PAGE 3-7)
REC_LEVEL_VOL_CH1
REC_LEVEL_VOL_CH2
㉑ OVERALL (7/7) (PAGE 3-7)
HDMI_AUSEL
AU_MUTE
AU_MONI_SEL0, AU_MONI_SEL1
⑤ OVERALL (1/7) (PAGE 3-1)
AU_MONI_SEL0, AU_MONI_SEL1
SRC_PDN
DEMO, DEM1
㉒ OVERALL (6/7) (PAGE 3-6)
XPSV_D4
XCS_LCD
VD_SI, VD_SO, XVD_SCK
㉓ OVERALL (6/7) (PAGE 3-6)
VD_SI, VD_SO, XVD_SCK
SDC_IN
XCS_IC_6401
XCS_IC_6601
HDI_VD
XRST_VTR
① OVERALL (1/7) (PAGE 3-1)
▬ : VIDEO/AUDIO/SERVO SIGNAL
▬ : SERVO SIGNAL
05

3-5. OVERALL BLOCK DIAGRAM (5/7)

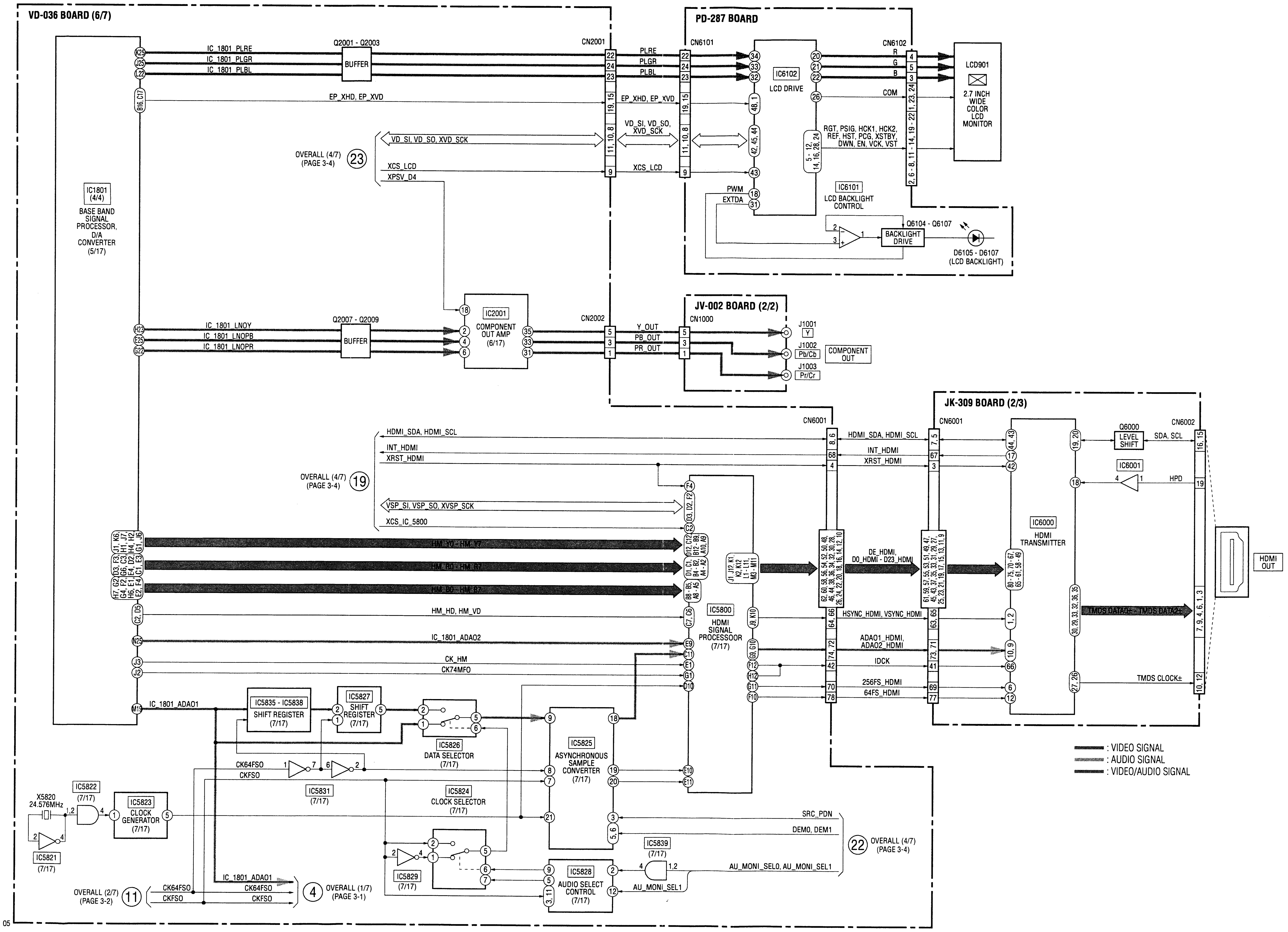
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



R MECHANISM DECK
(MDX-R211)
(2/2)
VD-036 BOARD (5/7)
MD-76 BOARD
RP-243 BOARD (2/2)
FP-104 FLEXIBLE BOARD
FP-248 FLEXIBLE BOARD
CN5401
LM±
M902
CAM MOTOR
ENCODER
CN5402 (2/2)
CN1001 (2/2)
CN1004
CN001
CN1003
CN002
CN003
S004
REC PROOF
CN004
4 PIN CONNECTOR
IC5403 (10/17)
CAM MOTOR DRIVE
LOAD, UNLOAD
T REEL FG AMP
TREEL_FG
S REEL FG AMP
SREEL_FG
TAPE TOP DETECT
TAPE_TOP
TAPE END DETECT
TAPE_END
REEL ERROR LPF
IC5000 (2/2)
MECHA CONTROL (11/17)
IC5404 (10/17)
Q5402 BUFFER
Q5405 BUFFER
Q5403 BUFFER
Q5401 BUFFER
IC5405 REEL PWM DRIVER (10/17)
Q5404 REEL PWM
IC5401 REEL MOTOR DRIVE (10/17)
OVERALL (3/7) (PAGE 3-3) 18
REC_PROOF
CHIME_SDA, CHIME_SCL
CHIME_3(SDA), CHIME_2(SCK)
TFG_IN
TFG-IN
SFG_IN
TOP_SENS
TOP_SENSE
END_SENS
END_SENSE
REEL_U, REEL_V, REEL_W
REEL_ERR
REEL_FWD, REEL_ON
U±, V±, W±
REELM_FG
IC1001 REEL MOTOR FG AMP
FG1, FG2
MR_FG1, MR_FG2
IC004 T REEL FG
IC005 S REEL FG
Q002 TAPE TOP SENSOR
Q001 TAPE END SENSOR
D001 TAPE LED
M904 REEL MOTOR
U, V, W
REEL FG
HALL
TAPE_LED_ON
TAPE_LED(K)
Q1001 LED DRIVE
TAPE_LED
MODE_SW_A - MODE_SW_D
MODE_SW_A - D
MODE_A - D
DEW_DET
DEW
DEW SENSOR
XCC_DOWN
CC_DOWN
S003 (CC DOWN)
XC_IN
C_IN
S002 (C IN)
L_CASETTE
S001 (L/S CAS)
OVERALL (7/7) (PAGE 3-7) 24
T_ELTN_ERR
T_ELETEN
S_ELTN_ERR
S_ELETEN
RV001 GAIN
RV002 OFFSET
IC001 ELETEN ERROR AMP
IC002 T ELETEN SENSOR
IC003 S ELETEN SENSOR
RV003 GAIN
RV004 OFFSET
05

3-6. OVERALL BLOCK DIAGRAM (6/7)

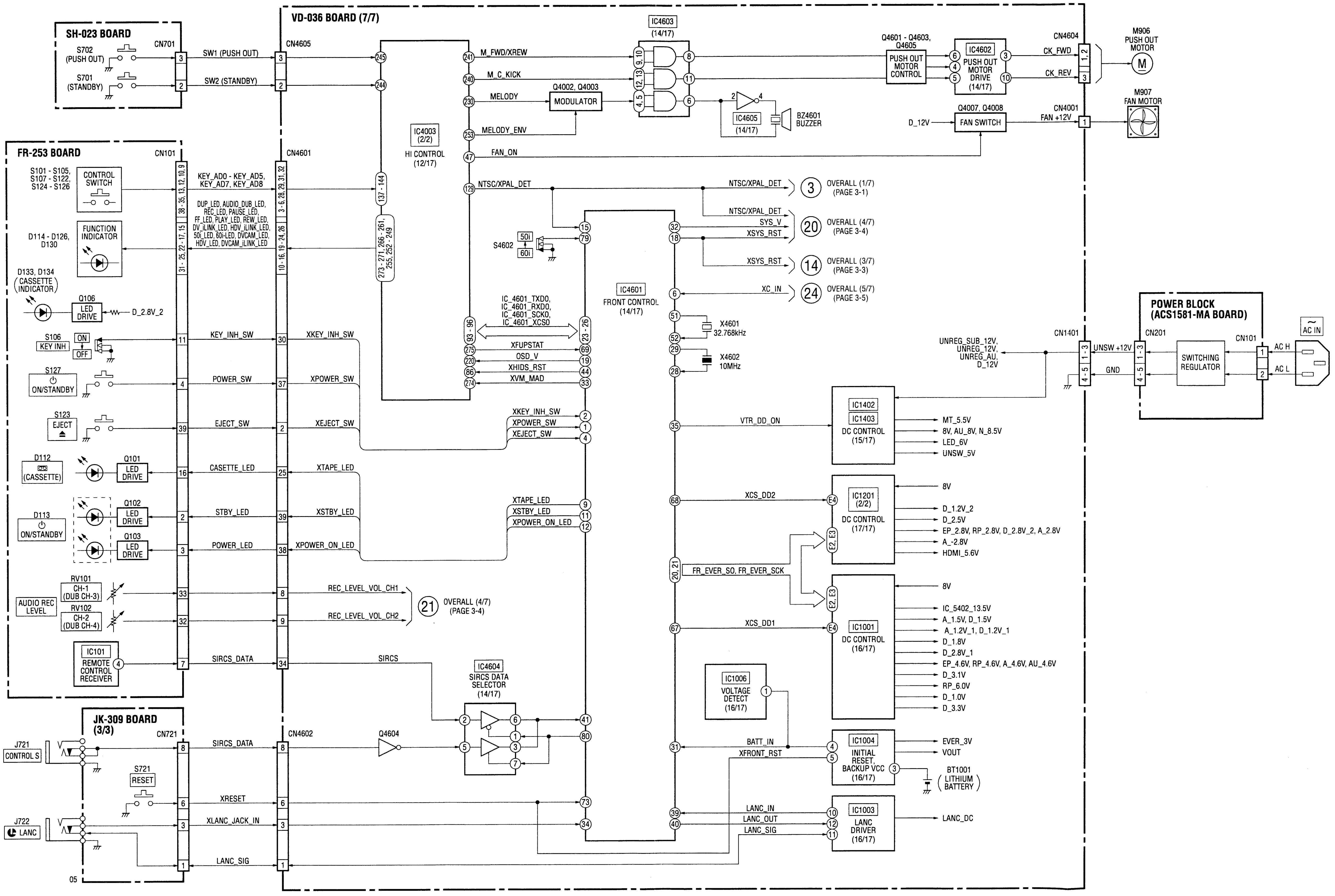
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



VD-036 BOARD (6/7)
IC1801 (4/4) BASE BAND SIGNAL PROCESSOR, D/A CONVERTER (5/17)
IC_1801_PLRE
IC_1801_PLGR
IC_1801_PLBL
Q2001 - Q2003
BUFFER
EP_XHD, EP_XVD
VD_SI, VD_SO, XVD_SCK
OVERALL (4/7) (PAGE 3-4) 23
XCS_LCD
XPSV_D4
CN2001
PLRE
PLGR
PLBL
VD_SI, VD_SO, XVD_SCK
PD-287 BOARD
CN6101
IC6102 LCD DRIVE
CN6102
R
G
B
COM
RGT, PSIG, HCK1, HCK2, REF, HST, PCG, XSTBY, DWN, EN, VCK, VST
LCD901
2.7 INCH WIDE COLOR LCD MONITOR
PWM
EXTDA
IC6101 LCD BACKLIGHT CONTROL
Q6104 - Q6107
BACKLIGHT DRIVE
D6105 - D6107 (LCD BACKLIGHT)
IC_1801_LNOY
IC_1801_LNOPB
IC_1801_LNOPR
Q2007 - Q2009
BUFFER
IC2001 COMPONENT OUT AMP (6/17)
CN2002
Y_OUT
PB_OUT
PR_OUT
JV-002 BOARD (2/2)
CN1000
J1001 Y
J1002 Pb/Cb
J1003 Pr/Cr
COMPONENT OUT
CN6001
JK-309 BOARD (2/3)
CN6001
HDMI_SDA, HDMI_SCL
INT_HDMI
XRST_HDMI
OVERALL (4/7) (PAGE 3-4) 19
VSP_SI, VSP_SO, XVSP_SCK
XCS_IC_5800
HM_Y0 - HM_Y7
HM_R0 - HM_R7
HM_B0 - HM_B7
HM_HD, HM_VD
IC_1801_ADAO2
CK_HM
CK74MFO
IC5800 HDMI SIGNAL PROCESSOOR (7/17)
DE_HDMI, D0_HDMI - D23_HDMI
HSYNC_HDMI, VSYNC_HDMI
ADAO1_HDMI, ADAO2_HDMI
IDCK
256FS_HDMI
64FS_HDMI
Q6000 LEVEL SHIFT
SDA, SCL
IC6001
HPD
IC6000 HDMI TRANSMITTER
TMDS DATA0± - TMDS DATA2±
TMDS CLOCK±
CN6002
HDMI OUT
IC_1801_ADAO1
IC5835 - IC5838 SHIFT REGISTER (7/17)
IC5827 SHIFT REGISTER (7/17)
IC5826 DATA SELECTOR (7/17)
IC5825 ASYNCHRONOUS SAMPLE CONVERTER (7/17)
CK64FSO
CKFSO
IC5831 (7/17)
IC5824 CLOCK SELECTOR (7/17)
X5820 24.576MHz
IC5822 (7/17)
IC5823 CLOCK GENERATOR (7/17)
IC5821 (7/17)
SRC_PDN
DEMO, DEM1
OVERALL (4/7) (PAGE 3-4) 22
IC5839 (7/17)
AU_MONI_SEL0, AU_MONI_SEL1
AU_MONI_SEL1
IC5829 (7/17)
IC5828 AUDIO SELECT CONTROL (7/17)
IC_1801_ADAO1
CK64FSO
CKFSO
OVERALL (2/7) (PAGE 3-2) 11
OVERALL (1/7) (PAGE 3-1) 4
▬ : VIDEO SIGNAL
▬ : AUDIO SIGNAL
▬ : VIDEO/AUDIO SIGNAL
05

3-7. OVERALL BLOCK DIAGRAM (7/7)

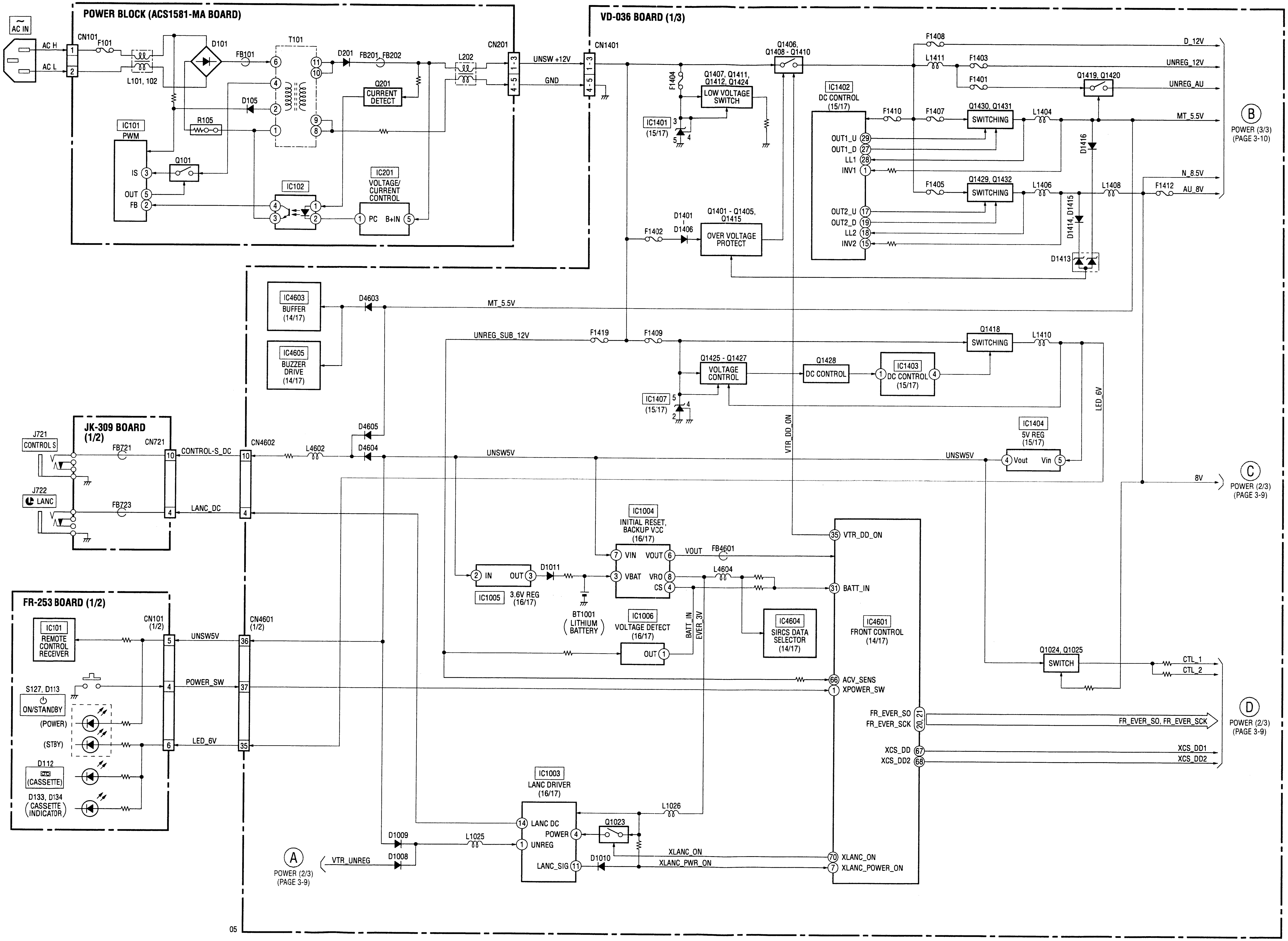
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



SH-023 BOARD
S702 (PUSH OUT)
S701 (STANDBY)
CN701
SW1 (PUSH OUT)
SW2 (STANDBY)
VD-036 BOARD (7/7)
CN4605
IC4603 (14/17)
M_FWD/XREW
M_C_KICK
MELODY
MELODY_ENV
FAN_ON
Q4002, Q4003
MODULATOR
IC4605 (14/17)
BZ4601 BUZZER
Q4601 - Q4603, Q4605
PUSH OUT MOTOR CONTROL
IC4602
PUSH OUT MOTOR DRIVE (14/17)
CN4604
CK_FWD
CK_REV
M906 PUSH OUT MOTOR
M
M907 FAN MOTOR
Q4007, Q4008
FAN SWITCH
D_12V
CN4001
FAN +12V
IC4003 (2/2)
HI CONTROL (12/17)
FR-253 BOARD
CN101
S101 - S105, S107 - S122, S124 - S126
CONTROL SWITCH
D114 - D126, D130
FUNCTION INDICATOR
D133, D134 (CASSETTE INDICATOR)
Q106
LED DRIVE
D_2.8V_2
CN4601
KEY_AD0 - KEY_AD5, KEY_AD7, KEY_AD8
DUP_LED, AUDIO_DUB_LED, REC_LED, PAUSE_LED, FF_LED, PLAY_LED, REW_LED, DV_iLINK_LED, HDV_iLINK_LED, 50i_LED, 60i-LED, DVCAM_LED, HDV_LED, DVCAM_iLINK_LED
NTSC/XPAL_DET
SYS_V
XSYS_RST
XC_IN
3 OVERALL (1/7) (PAGE 3-1)
20 OVERALL (4/7) (PAGE 3-4)
14 OVERALL (3/7) (PAGE 3-3)
24 OVERALL (5/7) (PAGE 3-5)
S4602
50i
60i
IC_4601_TXD0, IC_4601_RXD0, IC_4601_SCK0, IC_4601_XCS0
XFUPSTAT
OSD_V
XHIDS_RST
XVM_MAD
IC4601 FRONT CONTROL (14/17)
X4601 32.768kHz
X4602 10MHz
S106 KEY INH ON OFF
KEY_INH_SW
XKEY_INH_SW
S127 ON/STANDBY
POWER_SW
XPOWER_SW
S123 EJECT
EJECT_SW
XEJECT_SW
D112 (CASSETTE)
Q101 LED DRIVE
CASETTE_LED
XTAPE_LED
D113 ON/STANDBY
Q102 LED DRIVE
Q103 LED DRIVE
STBY_LED
XSTBY_LED
POWER_LED
XPOWER_ON_LED
AUDIO REC LEVEL
RV101 CH-1 (DUB CH-3)
RV102 CH-2 (DUB CH-4)
REC_LEVEL_VOL_CH1
REC_LEVEL_VOL_CH2
21 OVERALL (4/7) (PAGE 3-4)
IC101 REMOTE CONTROL RECEIVER
SIRCS_DATA
SIRCS
IC4604 SIRCS DATA SELECTOR (14/17)
JK-309 BOARD (3/3)
CN721
J721 CONTROL S
J722 LANC
S721 RESET
CN4602
Q4604
XRESET
XLANC_JACK_IN
LANC_SIG
05
VTR_DD_ON
IC1402
IC1403
DC CONTROL (15/17)
MT_5.5V
8V, AU_8V, N_8.5V
LED_6V
UNSW_5V
XCS_DD2
IC1201 (2/2)
DC CONTROL (17/17)
8V
D_1.2V_2
D_2.5V
EP_2.8V, RP_2.8V, D_2.8V_2, A_2.8V
A_-2.8V
HDMI_5.6V
FR_EVER_SO, FR_EVER_SCK
XCS_DD1
IC1001 DC CONTROL (16/17)
IC_5402_13.5V
A_1.5V, D_1.5V
A_1.2V_1, D_1.2V_1
D_1.8V
D_2.8V_1
EP_4.6V, RP_4.6V, A_4.6V, AU_4.6V
D_3.1V
RP_6.0V
D_1.0V
D_3.3V
IC1006 VOLTAGE DETECT (16/17)
BATT_IN
XFRONT_RST
IC1004 INITIAL RESET, BACKUP VCC (16/17)
EVER_3V
VOUT
BT1001 (LITHIUM BATTERY)
LANC_IN
LANC_OUT
LANC_SIG
IC1003 LANC DRIVER (16/17)
LANC_DC
UNREG_SUB_12V, UNREG_12V, UNREG_AU, D_12V
CN1401
UNSW +12V
GND
POWER BLOCK (ACS1581-MA BOARD)
CN201
CN101
SWITCHING REGULATOR
AC IN
AC H
AC L

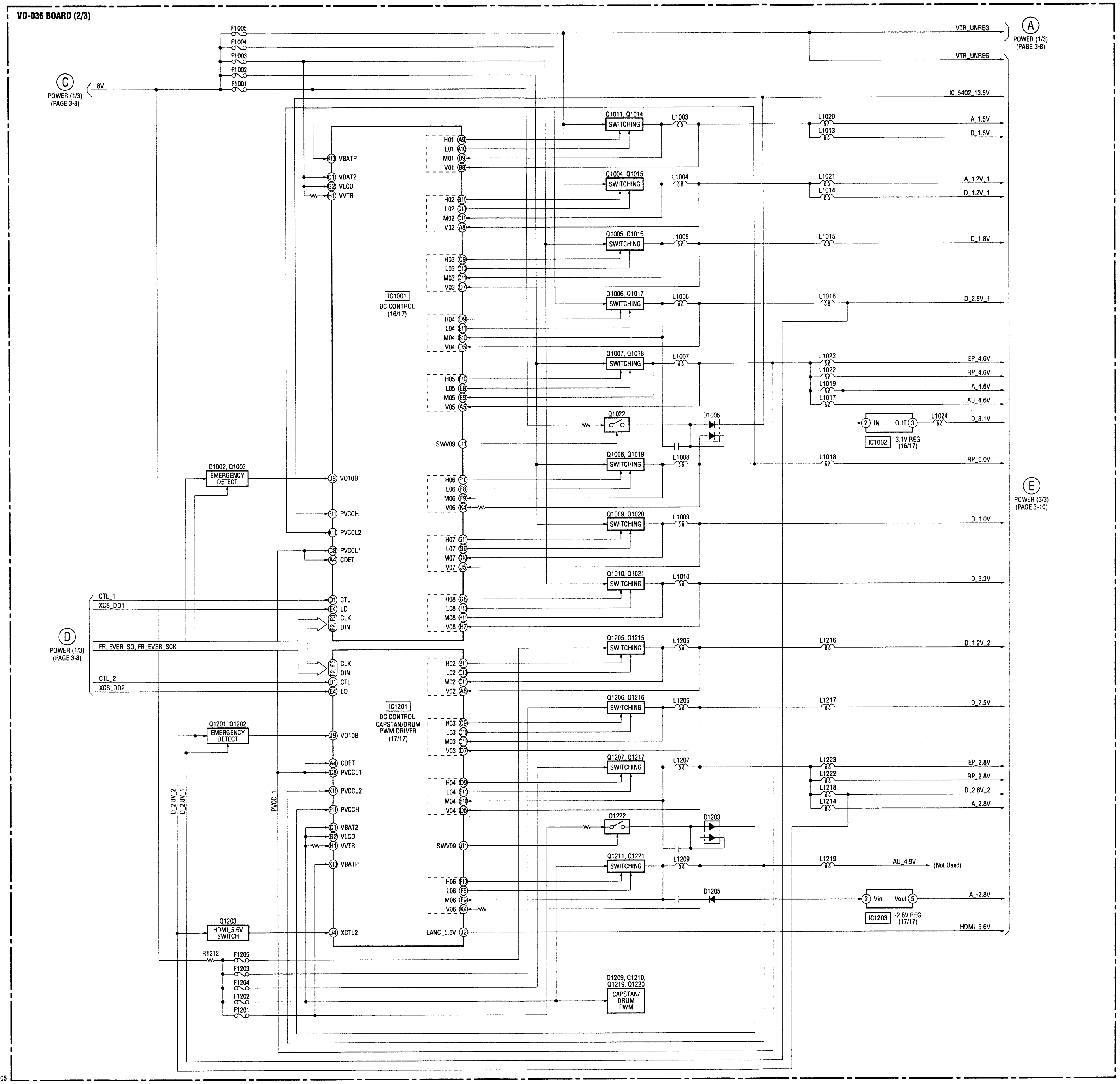
3-8. POWER BLOCK DIAGRAM (1/3)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.


AC IN
POWER BLOCK (ACS1581-MA BOARD)
CN101
AC H
AC L
F101
L101, 102
D101
FB101
T101
D201
FB201
FB202
L202
CN201
Q201
CURRENT DETECT
D105
R105
IC101
PWM
IS
OUT
FB
Q101
IC102
IC201
VOLTAGE/ CURRENT CONTROL
PC
B+IN
UNSW +12V
GND
VD-036 BOARD (1/3)
CN1401
F1404
Q1407, Q1411, Q1412, Q1424
LOW VOLTAGE SWITCH
IC1401
(15/17)
Q1406, Q1408 - Q1410
IC1402
DC CONTROL
(15/17)
OUT1_U
OUT1_D
LL1
INV1
OUT2_U
OUT2_D
LL2
INV2
F1408
L1411
F1403
F1401
Q1419, Q1420
F1410
F1407
Q1430, Q1431
SWITCHING
L1404
D1416
F1405
Q1429, Q1432
SWITCHING
L1406
L1408
F1412
D1414, D1415
D1413
D1401
D1406
F1402
Q1401 - Q1405, Q1415
OVER VOLTAGE PROTECT
D_12V
UNREG_12V
UNREG_AU
MT_5.5V
N_8.5V
AU_8V
B
POWER (3/3)
(PAGE 3-10)
IC4603
BUFFER
(14/17)
IC4605
BUZZER DRIVE
(14/17)
D4603
MT_5.5V
UNREG_SUB_12V
F1419
F1409
Q1418
SWITCHING
L1410
Q1425 - Q1427
VOLTAGE CONTROL
Q1428
DC CONTROL
IC1403
DC CONTROL
(15/17)
IC1407
(15/17)
LED_6V
VTR_DD_ON
IC1404
5V REG
(15/17)
Vout
Vin
UNSW5V
8V
C
POWER (2/3)
(PAGE 3-9)
JK-309 BOARD (1/2)
J721
CONTROL S
J722
LANC
FB721
FB723
CN721
CONTROL-S_DC
LANC_DC
CN4602
L4602
D4605
D4604
UNSW5V
IC1004
INITIAL RESET, BACKUP VCC
(16/17)
VIN
VOUT
VBAT
VRO
CS
VOUT
FB4601
L4604
IN
OUT
D1011
IC1005
3.6V REG
(16/17)
BT1001
(LITHIUM BATTERY)
IC1006
VOLTAGE DETECT
(16/17)
OUT
BATT_IN
EVER_3V
IC4604
SIRCS DATA SELECTOR
(14/17)
IC4601
FRONT CONTROL
(14/17)
VTR_DD_ON
BATT_IN
ACV_SENS
XPOWER_SW
FR_EVER_SO
FR_EVER_SCK
XCS_DD
XCS_DD2
XLANC_ON
XLANC_POWER_ON
Q1024, Q1025
SWITCH
CTL_1
CTL_2
FR_EVER_SO, FR_EVER_SCK
XCS_DD1
XCS_DD2
D
POWER (2/3)
(PAGE 3-9)
FR-253 BOARD (1/2)
IC101
REMOTE CONTROL RECEIVER
CN101 (1/2)
CN4601 (1/2)
UNSW5V
POWER_SW
LED_6V
S127, D113
ON/STANDBY
(POWER)
(STBY)
D112
(CASSETTE)
D133, D134
(CASSETTE INDICATOR)
IC1003
LANC DRIVER
(16/17)
LANC DC
POWER
UNREG
LANC_SIG
Q1023
L1026
L1025
D1009
D1008
D1010
XLANC_ON
XLANC_PWR_ON
A
POWER (2/3)
(PAGE 3-9)
VTR_UNREG
05

3-9. POWER BLOCK DIAGRAM (2/3)

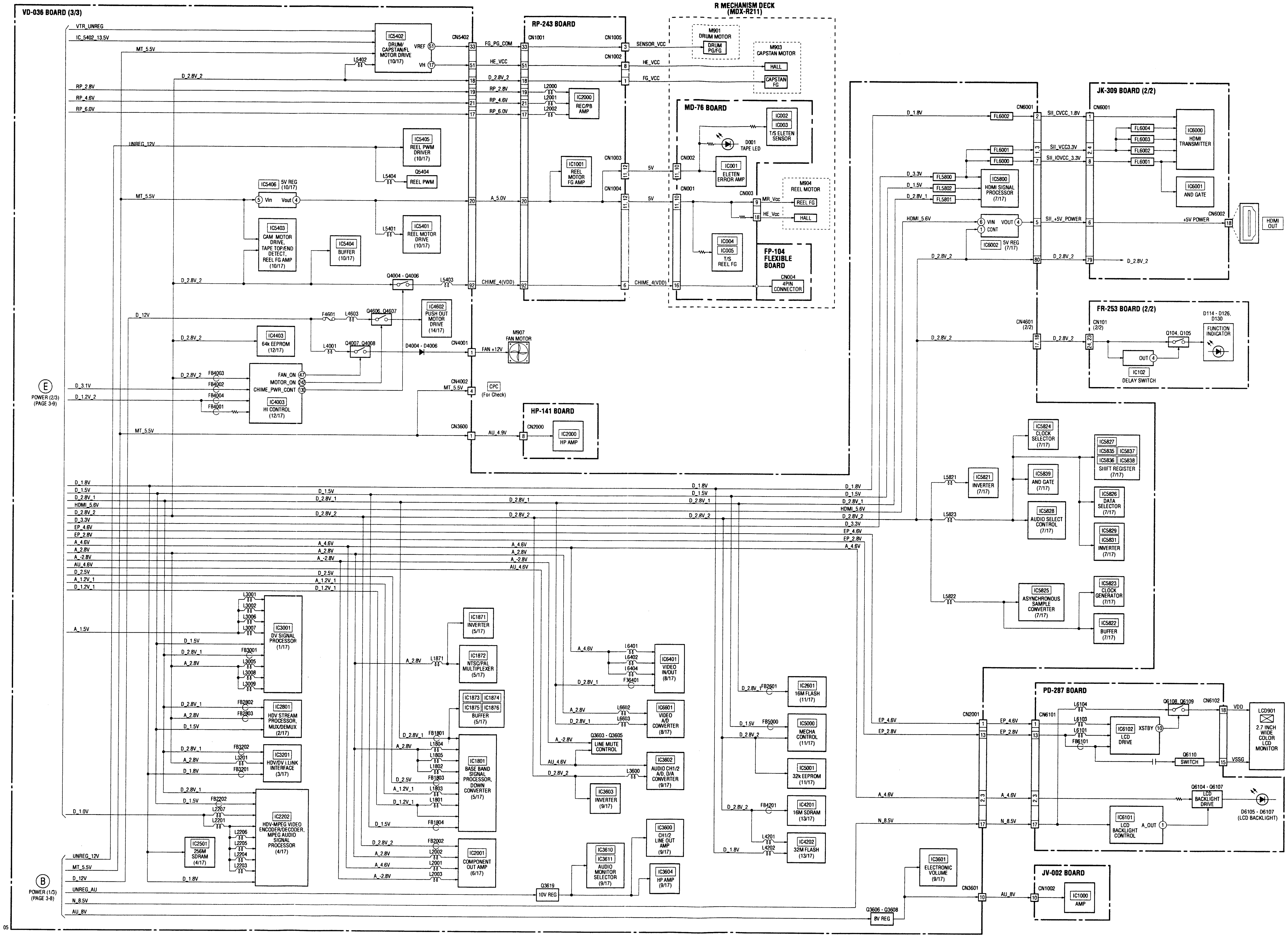
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



VD-036 BOARD (2/3)
F1005
F1004
F1003
F1002
F1001
8V
C
POWER (1/3)
(PAGE 3-8)
VTR_UNREG
VTR_UNREG
A
POWER (1/3)
(PAGE 3-8)
IC_5402_13.5V
Q1011, Q1014
SWITCHING
L1003
L1020
L1013
A_1.5V
D_1.5V
H01
L01
M01
V01
VBATP
VBAT2
VLCD
VVTR
Q1004, Q1015
SWITCHING
L1004
L1021
L1014
A_1.2V_1
D_1.2V_1
H02
L02
M02
V02
Q1005, Q1016
SWITCHING
L1005
L1015
D_1.8V
H03
L03
M03
V03
IC1001
DC CONTROL
(16/17)
Q1006, Q1017
SWITCHING
L1006
L1016
D_2.8V_1
H04
L04
M04
V04
Q1007, Q1018
SWITCHING
L1007
L1023
L1022
L1019
L1017
EP_4.6V
RP_4.6V
A_4.6V
AU_4.6V
H05
L05
M05
V05
Q1022
D1006
IN
OUT
L1024
D_3.1V
IC1002
3.1V REG
(16/17)
SWV09
Q1002, Q1003
EMERGENCY DETECT
VO10B
Q1008, Q1019
SWITCHING
L1008
L1018
RP_6.0V
E
POWER (3/3)
(PAGE 3-10)
H06
L06
M06
V06
PVCCH
PVCCL2
Q1009, Q1020
SWITCHING
L1009
D_1.0V
PVCCL1
CDET
H07
L07
M07
V07
Q1010, Q1021
SWITCHING
L1010
D_3.3V
CTL_1
XCS_DD1
CTL
LD
CLK
DIN
H08
L08
M08
V08
D
POWER (1/3)
(PAGE 3-8)
FR_EVER_SO, FR_EVER_SCK
Q1205, Q1215
SWITCHING
L1205
L1216
D_1.2V_2
CLK
DIN
CTL
LD
CTL_2
XCS_DD2
H02
L02
M02
V02
Q1206, Q1216
SWITCHING
L1206
L1217
D_2.5V
IC1201
DC CONTROL,
CAPSTAN/DRUM
PWM DRIVER
(17/17)
Q1201, Q1202
EMERGENCY DETECT
VO10B
H03
L03
M03
V03
Q1207, Q1217
SWITCHING
L1207
L1223
L1222
L1218
L1214
EP_2.8V
RP_2.8V
D_2.8V_2
A_2.8V
CDET
PVCCL1
D_2.8V_2
D_2.8V_1
PVCC_1
PVCCL2
PVCCH
H04
L04
M04
V04
Q1222
D1203
VBAT2
VLCD
VVTR
SWV09
Q1211, Q1221
SWITCHING
L1209
L1219
AU_4.9V
(Not Used)
VBATP
H06
L06
M06
V06
D1205
Vin
Vout
A_-2.8V
IC1203
-2.8V REG
(17/17)
Q1203
HDMI_5.6V SWITCH
XCTL2
LANC_5.6V
HDMI_5.6V
R1212
F1205
F1203
F1204
F1202
F1201
Q1209, Q1210,
Q1219, Q1220
CAPSTAN/ DRUM PWM
05

3-10. POWER BLOCK DIAGRAM (3/3)

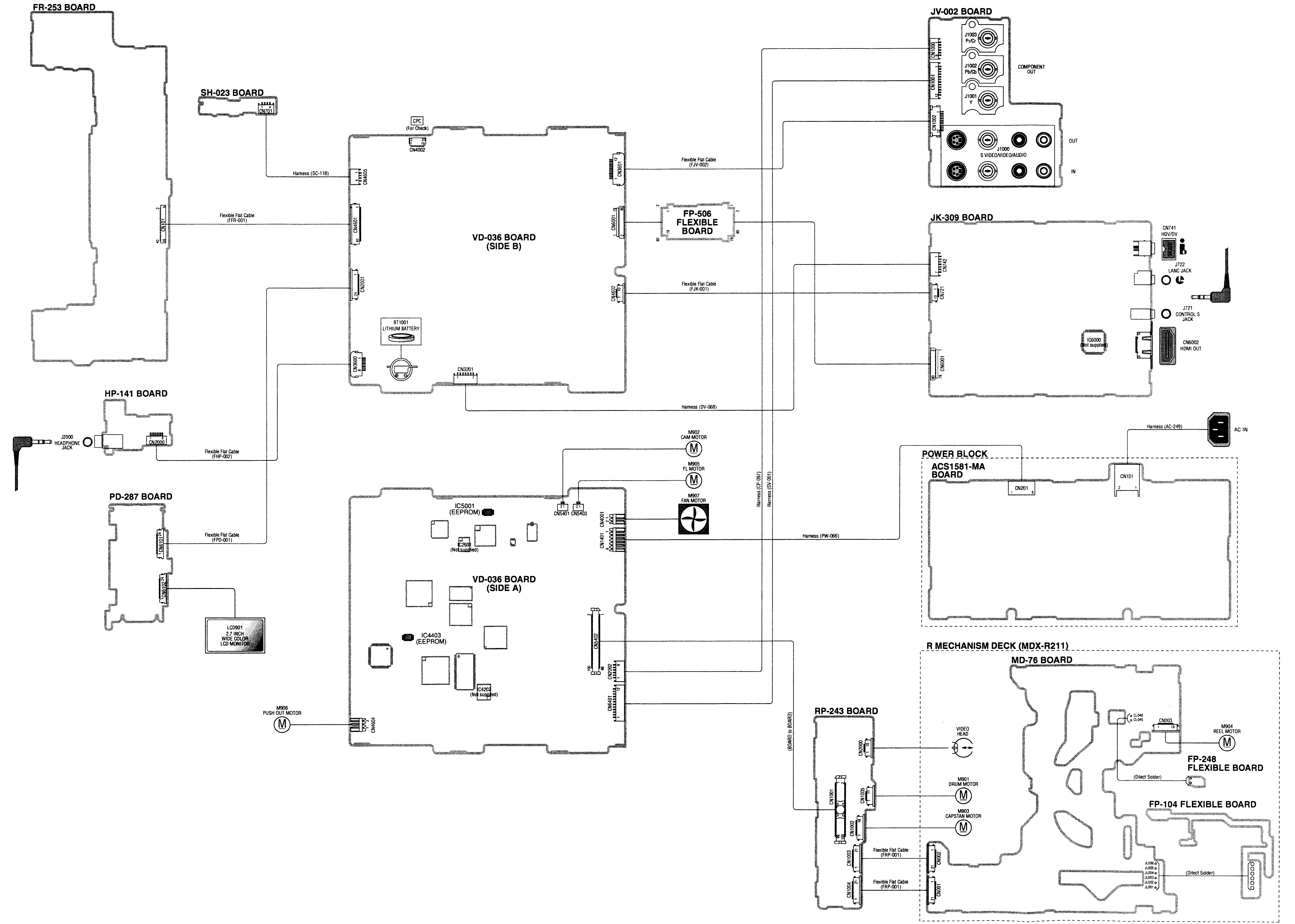
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



VD-036 BOARD (3/3)
RP-243 BOARD
R MECHANISM DECK (MDX-R211)
MD-76 BOARD
FP-104 FLEXIBLE BOARD
JK-309 BOARD (2/2)
FR-253 BOARD (2/2)
HP-141 BOARD
PD-287 BOARD
JV-002 BOARD
IC5402 DRUM/ CAPSTAN/FL MOTOR DRIVE (10/17)
IC5405 REEL PWM DRIVER (10/17)
Q5404 REEL PWM
IC5406 5V REG (10/17)
IC5403 CAM MOTOR DRIVE, TAPE TOP/END DETECT, REEL FG AMP (10/17)
IC5404 BUFFER (10/17)
IC5401 REEL MOTOR DRIVE (10/17)
IC4602 PUSH OUT MOTOR DRIVE (14/17)
IC4403 64k EEPROM (12/17)
IC4003 HI CONTROL (12/17)
IC2000 REC/PB AMP
IC1001 REEL MOTOR FG AMP
M901 DRUM MOTOR
M903 CAPSTAN MOTOR
M904 REEL MOTOR
M907 FAN MOTOR
IC002 IC003 T/S ELETEN SENSOR
D001 TAPE LED
IC001 ELETEN ERROR AMP
IC004 IC005 T/S REEL FG
CN004 4PIN CONNECTOR
CPC (For Check)
IC2000 HP AMP
IC6000 HDMI TRANSMITTER
IC6001 AND GATE
HDMI OUT
IC5800 HDMI SIGNAL PROCESSOR (7/17)
IC6002 5V REG (7/17)
IC102 DELAY SWITCH
D114 - D126, D130 FUNCTION INDICATOR
IC5824 CLOCK SELECTOR (7/17)
IC5827 IC5835 IC5837 IC5836 IC5838 SHIFT REGISTER (7/17)
IC5821 INVERTER (7/17)
IC5839 AND GATE (7/17)
IC5826 DATA SELECTOR (7/17)
IC5828 AUDIO SELECT CONTROL (7/17)
IC5829 IC5831 INVERTER (7/17)
IC5825 ASYNCHRONOUS SAMPLE CONVERTER (7/17)
IC5823 CLOCK GENERATOR (7/17)
IC5822 BUFFER (7/17)
IC3001 DV SIGNAL PROCESSOR (1/17)
IC2801 HDV STREAM PROCESSOR, MUX/DEMUX (2/17)
IC3201 HDV/DV I.LINK INTERFACE (3/17)
IC2202 HDV-MPEG VIDEO ENCODER/DECODER, MPEG AUDIO SIGNAL PROCESSOR (4/17)
IC2501 256M SDRAM (4/17)
IC1871 INVERTER (5/17)
IC1872 NTSC/PAL MULTIPLEXER (5/17)
IC1873 IC1874 IC1875 IC1876 BUFFER (5/17)
IC1801 BASE BAND SIGNAL PROCESSOR, DOWN CONVERTER (5/17)
IC2001 COMPONENT OUT AMP (6/17)
IC6401 VIDEO IN/OUT (8/17)
IC6601 VIDEO A/D CONVERTER (8/17)
Q3603 - Q3605 LINE MUTE CONTROL
IC3602 AUDIO CH1/2 A/D, D/A CONVERTER (9/17)
IC3603 INVERTER (9/17)
IC3600 CH1/2 LINE OUT AMP (9/17)
IC3610 IC3611 AUDIO MONITOR SELECTOR (9/17)
IC3604 HP AMP (9/17)
Q3610 10V REG
IC2601 16M FLASH (11/17)
IC5000 MECHA CONTROL (11/17)
IC5001 32k EEPROM (11/17)
IC4201 16M SDRAM (13/17)
IC4202 32M FLASH (13/17)
IC3601 ELECTRONIC VOLUME (9/17)
Q3606 - Q3608 8V REG
IC6102 LCD DRIVE
Q6108, Q6109
Q6110 SWITCH
LCD901 2.7 INCH WIDE COLOR LCD MONITOR
Q6104 - Q6107 LCD BACKLIGHT DRIVE
D6105 - D6107 (LCD BACKLIGHT)
IC6101 LCD BACKLIGHT CONTROL
IC1000 AMP
E POWER (2/3) (PAGE 3-9)
B POWER (1/3) (PAGE 3-8)
VTR_UNREG
IC_5402_13.5V
MT_5.5V
D_2.8V_2
RP_2.8V
RP_4.6V
RP_6.0V
UNREG_12V
D_12V
D_3.1V
D_1.2V_2
D_1.8V
D_1.5V
D_2.8V_1
HDMI_5.6V
D_3.3V
EP_4.6V
EP_2.8V
A_4.6V
A_2.8V
A_-2.8V
AU_4.6V
D_2.5V
A_1.2V_1
D_1.2V_1
A_1.5V
D_1.0V
MT_5.5V
UNREG_AU
N_8.5V
AU_8V
SENSOR_VCC
HE_VCC
FG_VCC
FG_PG_COM
A_5.0V
CHIME_4(VDD)
FAN_+12V
MR_Vcc
HE_Vcc
SII_CVCC_1.8V
SII_VCC3.3V
SII_IOVCC_3.3V
SII_+5V_POWER
+5V POWER

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



FR-253 BOARD
CN101
SH-023 BOARD
CN701
Harness (SC-118)
CPC
(For Check)
CN4002
CN4605
Flexible Flat Cable
(FFR-001)
CN4601
CN2001
CN3600
BT1001
LITHIUM BATTERY
CN3201
VD-036 BOARD
(SIDE B)
CN3601
CN6001
CN4602
Flexible Flat Cable
(FJV-002)
FP-506
FLEXIBLE
BOARD
Flexible Flat Cable
(FJK-001)
Harness (DV-068)
HP-141 BOARD
J2000
HEADPHONE
JACK
CN2000
Flexible Flat Cable
(FHP-002)
PD-287 BOARD
CN6101
CN6102
Flexible Flat Cable
(FPD-001)
LCD901
2.7 INCH
WIDE COLOR
LCD MONITOR
JV-002 BOARD
CN1000
CN1001
CN1002
J1003
Pr/Cr
J1002
Pb/Cb
J1001
Y
COMPONENT
OUT
J1000
S VIDEO/VIDEO/AUDIO
OUT
IN
JK-309 BOARD
CN742
CN721
CN6001
IC6000
(Not supplied)
CN741
HDV/DV
J722
LANC JACK
J721
CONTROL S
JACK
CN6002
HDMI OUT
M902
CAM MOTOR
M905
FL MOTOR
M907
FAN MOTOR
CN5401
CN5403
CN4001
CN1401
IC5001
(EEPROM)
IC2601
(Not supplied)
VD-036 BOARD
(SIDE A)
IC4403
(EEPROM)
IC4202
(Not supplied)
CN5402
CN2002
CN6401
CN4604
M906
PUSH OUT MOTOR
Harness (CP-097)
Harness (SV-001)
Harness (PW-066)
Harness (AC-249)
AC IN
POWER BLOCK
ACS1581-MA
BOARD
CN201
CN101
R MECHANISM DECK (MDX-R211)
MD-76 BOARD
(BOARD to BOARD)
RP-243 BOARD
CN2000
CN1001
CN1005
CN1002
CN1003
CN1004
VIDEO
HEAD
M901
DRUM MOTOR
M903
CAPSTAN MOTOR
Flexible Flat Cable
(FRP-001)
Flexible Flat Cable
(FRP-001)
CN002
CN001
CL046
CL045
CN003
M904
REEL MOTOR
FP-248
FLEXIBLE BOARD
(Dilect Solder)
FP-104 FLEXIBLE BOARD
JL006
JL005
JL004
JL003
JL002
JL001
(Dilect Solder)

4-2. SCHEMATIC DIAGRAMS

Link

- RP-243 BOARD (REC/PB AMP)
- VD-036 BOARD (1/17) (DV SIGNAL PROCESS)
- VD-036 BOARD (2/17) (HDV STREAM PROCESS)
- VD-036 BOARD (3/17) (HDV/DV i.LINK INTERFACE)
- VD-036 BOARD (4/17) (HDV-MPEG VIDEO ENCODE/DECODE)
- VD-036 BOARD (5/17) (BASE BAND SIGNAL PROCESS)
- VD-036 BOARD (6/17) (COMPONENT OUT)
- VD-036 BOARD (7/17) (HDMI SIGNAL PROCESS)
- VD-036 BOARD (8/17) (VIDEO IN/OUT)
- VD-036 BOARD (9/17) (AUDIO IN/OUT)
- VD-036 BOARD (10/17) (SERVO)
- VD-036 BOARD (11/17) (MECHA CONTROL)
- VD-036 BOARD (12/17) (HI CONTROL)
- VD-036 BOARD (13/17) (SDRAM, FLASH)
- VD-036 BOARD (14/17) (FRONT CONTROL)
- VD-036 BOARD (15/17) (DC IN, DC/DC CONVERTER 1)
- VD-036 BOARD (16/17) (DC/DC CONVERTER 2)
- VD-036 BOARD (17/17) (DC/DC CONVERTER 3)
- MD-76 BOARD (TAPE SENSOR)
- FP-248 FLEXIBLE BOARD (DEW SENSOR)
- FP-104 FLEXIBLE BOARD (CASSETTE DETECTION SWITCH)
- PD-287 BOARD (LCD DRIVE)
- FR-253 BOARD (USER CONTROL)
- JV-002 BOARD (VIDEO/AUDIO IN/OUT)
- JK-309 BOARD (HDMI OUT, JACK)
- HP-141 BOARD (HEADPHONE)
- SH-023 BOARD (EJECTION DETECT SWITCH)
- POWER BLOCK (ACS1581-MA BOARD)

- COMMON NOTE FOR SCHEMATIC DIAGRAMS

4-2. SCHEMATIC DIAGRAMS (ENGLISH)

THIS NOTE IS COMMON FOR SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For schematic diagrams)

- All capacitors are in μF unless otherwise noted. pF : μ μF. 50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10 W unless otherwise noted. kΩ=1000 Ω, MΩ=1000 kΩ.
- Caution when replacing chip parts. New parts must be attached after removal of chip. Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.

Example	C541	L452
	22U	10UH
	TA A	2520

Kinds of capacitor (TA) | Case size (A) | External dimensions (mm) (2520)

- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used. In such cases, the unused circuits may be indicated.
- Parts with ★ differ according to the model/destination. Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- ━▭━ : non flammable resistor
- ━▭━ : fusible resistor
- ▭ : panel designation
- ━━━ : B+ Line
- ▬ ▬ ▬ : B– Line
- ⇨ : IN/OUT direction of (+,–) B LINE.
- ▭ : adjustment for repair.
- ░░░ : not use circuit

(Measuring conditions voltage)

- Voltages are measured between the measurement points and ground when color bar signal input. They are reference values and reference waveforms. (VOM of DC 10 MΩ input impedance is used)
- Voltage values change depending upon input impedance of VOM used.)

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

(JAPANESE)

回路図共通ノート

(他に必要なノートは各ブロックに記載してあります)

【回路図ノート】

- ケミコン，タンタルを除くコンデンサで，耐圧50V以下のものはその耐圧を省略。単位はすべてμF（pはpF）。
- チップ抵抗で指示のないものは，1／10W以下。
  kΩ＝1000Ω，MΩ＝1000kΩ
- チップ部品交換時の注意
  取り外した部品は再使用せず，未使用の部品をご使用ください。
  タンタルコンデンサのマイナス側は熱に弱いため注意してください。
- チップ部品には下記のように表示したものがあります。

例　C 541　　　　L 452
　　22U　　　　　10UH
　　$\underline{\text{TA}}$　$\underline{\text{A}}$　　　$\underline{\text{2520}}$
　　↑　↑　　　　↑
　　種類　ケースサイズ　外形寸法（mm）

- 抵抗，コンデンサ，ICなど定数にXXがあるものは，使用していない事を示しています。このため，使用していない回路が記載されている事があります。
- ★印のある部品は，機種などにより異なりますので機能別マウント一覧表を参照してください。
- 可変抵抗と半固定抵抗で，B特性の表示を省略。
- 信号名表記について，下記のような場合があります。
  XEDIT → $\overline{\text{EDIT}}$　　PB/XREC → PB/$\overline{\text{REC}}$
- ─▭─は不燃性抵抗。
- ─▭─はヒューズ抵抗。
- ▭はパネル表示名称。
- ━━はB＋ライン。
- ▬ ▬ ▬はB－ライン。
- ⇨はBライン（＋，－）の入出力方向を示す。
- ▭は調整名称。
- ▒は未使用回路。

【電圧測定条件ノート】

- 電圧値はカラーバーゼネレータよりカラーバー信号を入力したときの対アース間の参考値。
  （デジタルマルチメータ；入力インピーダンス　DC10MΩ使用）
- 使用テスタの入力インピーダンスにより電圧値が多少異なります。

⚠印の部品，または⚠印付きの点線で囲まれた部品は，安全性を維持するために重要な部品です。
従って交換時は，必ず指定の部品を使用して下さい。

お願い

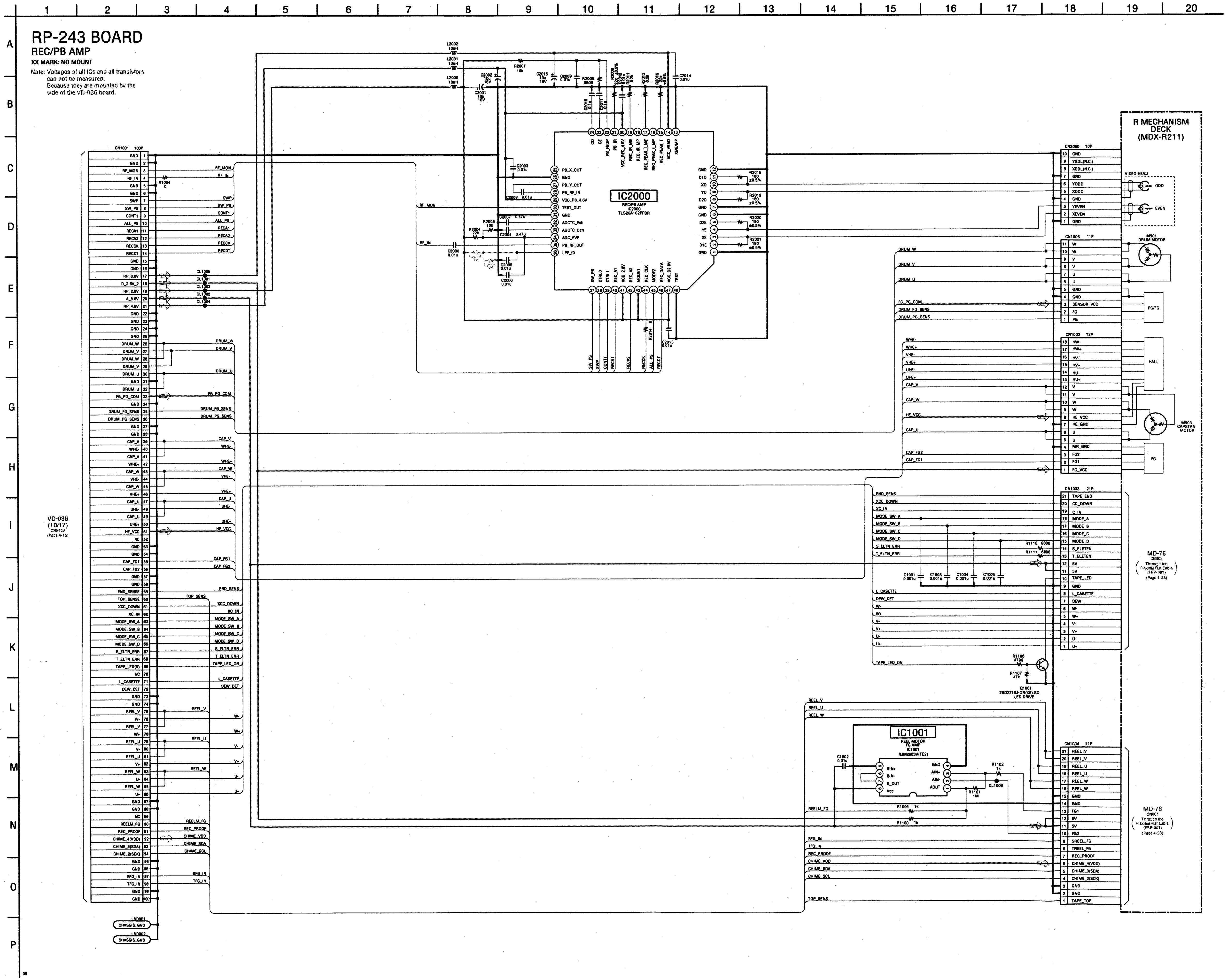
図面番号で部品を指定するときは基板名又はブロックを併せて指定して下さい。

RP-243 BOARD

REC/PB AMP

XX MARK: NO MOUNT

Note: Voltages of all ICs and all transistors can not be measured. Because they are mounted by the side of the VD-036 board.



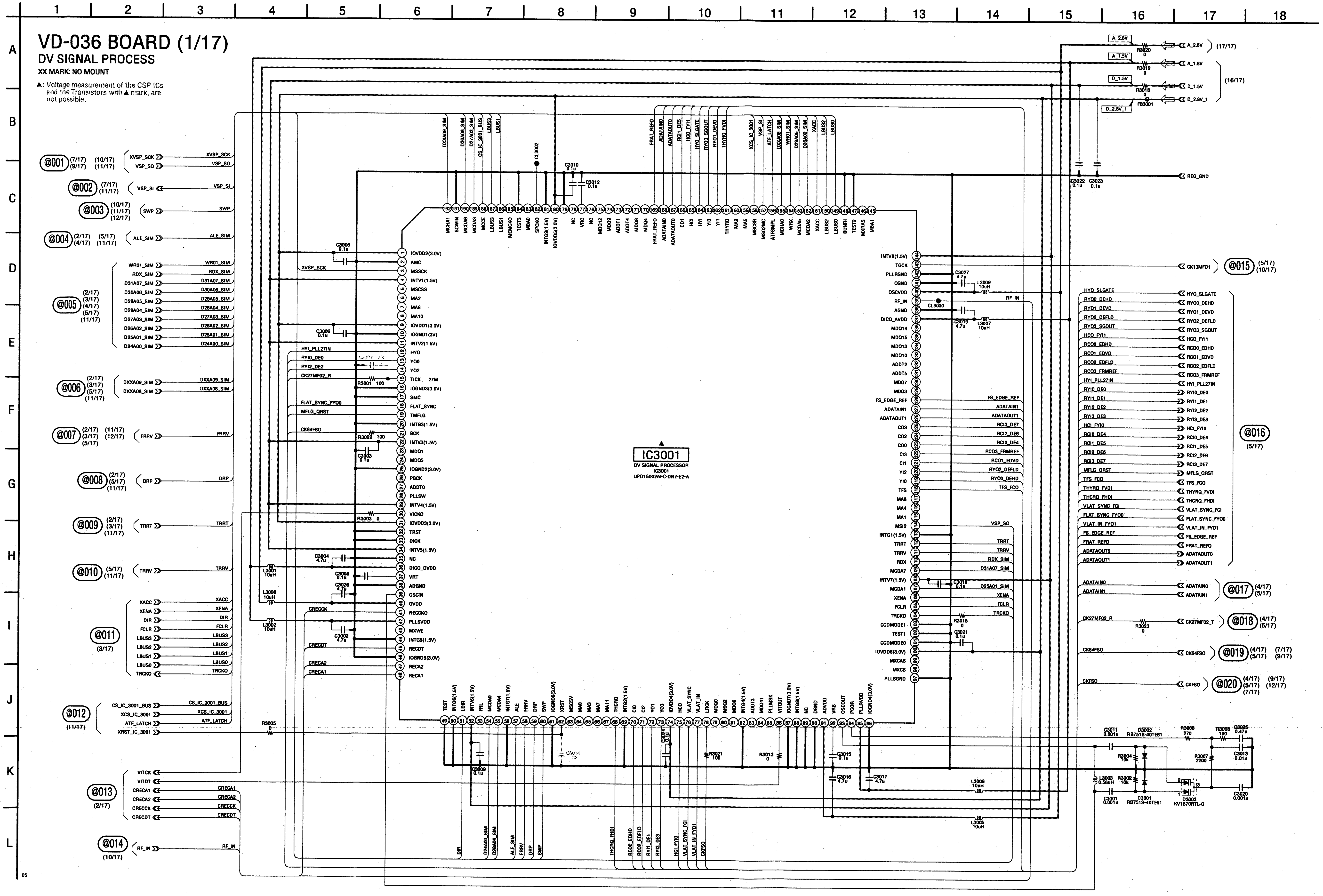
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
A B C D E F G H I J K L M N O P
IC2000
REC/PB AMP
IC2000
TLS26A102PFBR
IC1001
REEL MOTOR
FG AMP
IC1001
NJM2903V(TE2)
CN1001 100P
VD-036
(10/17)
CN5402
(Page 4-15)
R MECHANISM
DECK
(MDX-R211)
CN2000 10P
VIDEO HEAD
ODD
EVEN
CN1005 11P
M901
DRUM MOTOR
PG/FG
CN1002 18P
HALL
M903
CAPSTAN
MOTOR
FG
CN1003 21P
MD-76
CN002
Through the Flexible Flat Cable (FRP-001)
(Page 4-22)
CN1004 21P
MD-76
CN001
Through the Flexible Flat Cable (FRP-001)
(Page 4-23)
Q1001
2SD2216J-QR(K8).SO
LED DRIVE
L2000 10uH
L2001 10uH
L2002 10uH
R2007 10k
C2015 10u 16V
C2009 0.01u
R2008 6800
C2014 0.01u
C2002 10u 16V
C2001 10u 16V
C2003 0.01u
C2006 0.01u
C2007 0.47u
C2004 0.47u
R2003 10k
R2004 22k
C2000 0.01u
C2005 0.01u
C2008 0.01u
C2010 0.1u
C2011 0.1u
C2013 0.01u
R2014 0
R2018 180 ±0.5%
R2019 180 ±0.5%
R2020 180 ±0.5%
R2021 180 ±0.5%
R1004 0
CL1005
CL1001
CL1003
CL1002
CL1004
CL1006
R1110 6800
R1111 6800
C1001 0.001u
C1003 0.001u
C1004 0.001u
C1005 0.001u
R1106 4700
R1107 47k
C1002 0.01u
R1102 1k
R1101 1M
R1099 1k
R1100 1k
LND001
CHASSIS_GND
LND002
CHASSIS_GND

VD-036 BOARD (1/17)

DV SIGNAL PROCESS

XX MARK: NO MOUNT

▲: Voltage measurement of the CSP ICs and the Transistors with ▲ mark, are not possible.



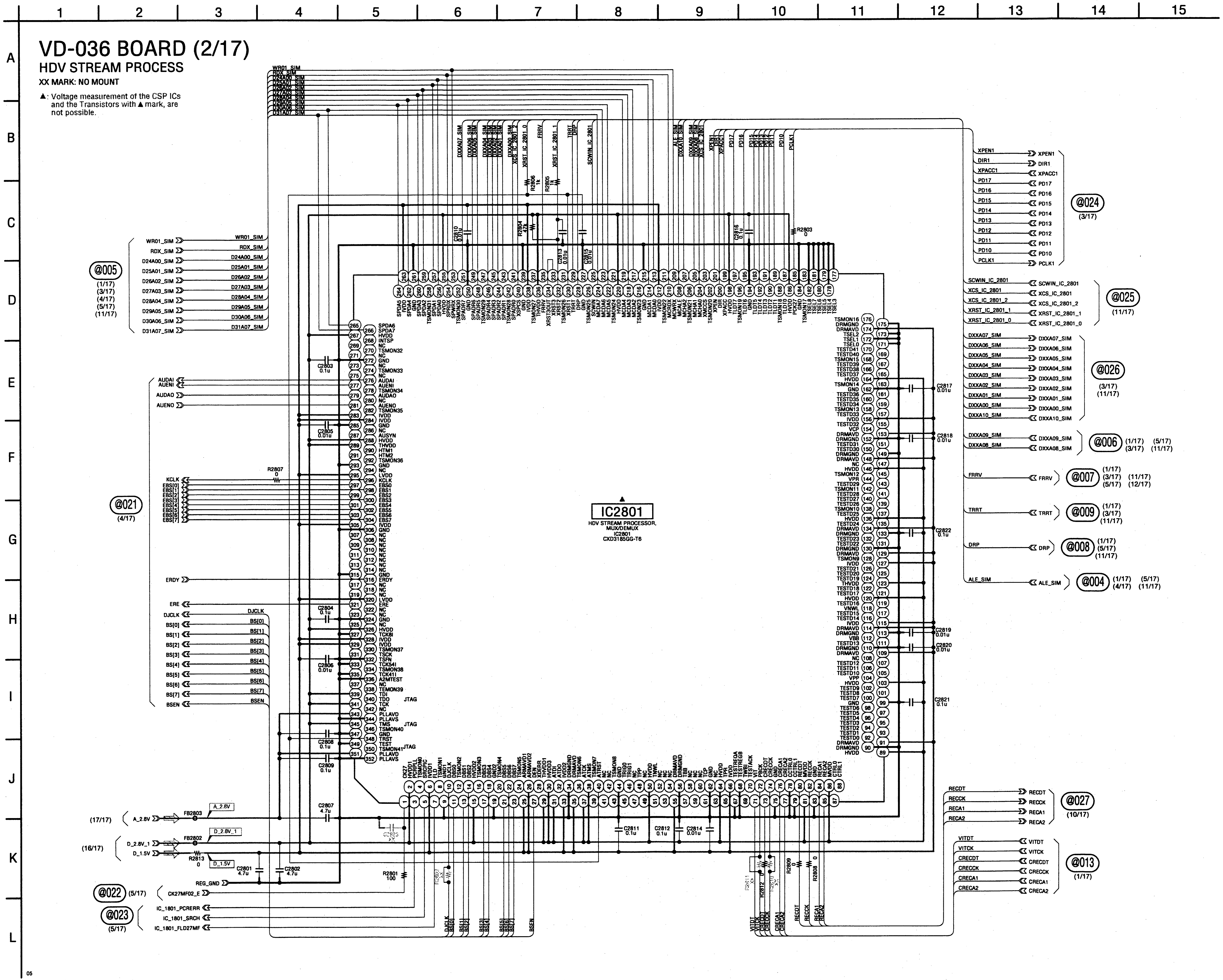
IC3001
DV SIGNAL PROCESSOR
IC3001
UPD15002AFC-DN2-E2-A
@001
@002
@003
@004
@005
@006
@007
@008
@009
@010
@011
@012
@013
@014
@015
@016
@017
@018
@019
@020
A_2.8V
A_1.5V
D_1.5V
D_2.8V_1
REG_GND
XVSP_SCK
VSP_SO
VSP_SI
SWP
ALE_SIM
RF_IN
CK13MFO1
CK27MFO2_T
CK64FSO
CKFSO
D3001 RB751S-40TE61
D3002 RB751S-40TE61
D3003 KV1870RTL-G

VD-036 BOARD (2/17)

HDV STREAM PROCESS

XX MARK: NO MOUNT

▲: Voltage measurement of the CSP ICs and the Transistors with ▲ mark, are not possible.



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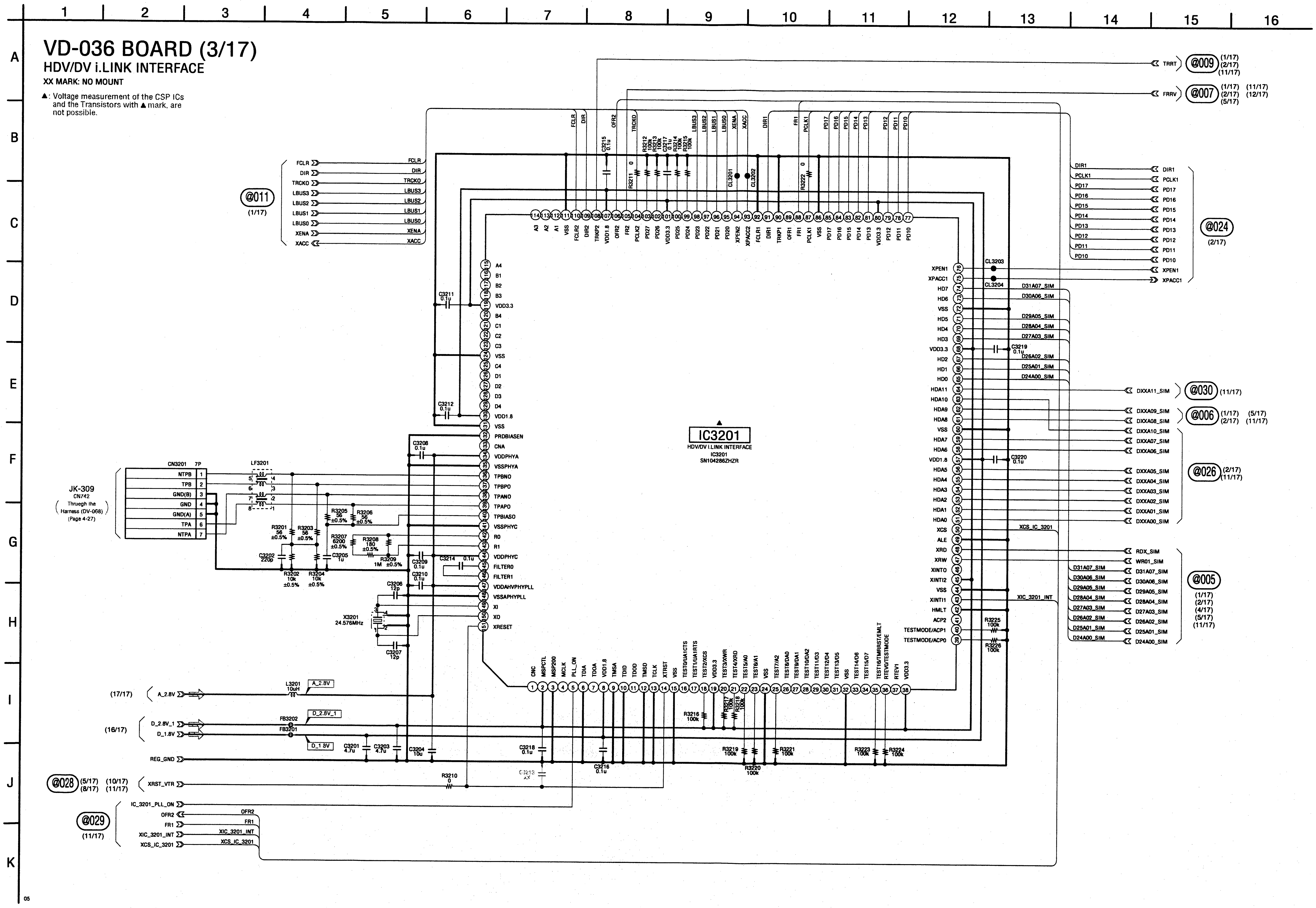
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
K
L
IC2801
HDV STREAM PROCESSOR, MUX/DEMUX
IC2801
CXD3185GG-T6
@005
(1/17)
(3/17)
(4/17)
(5/17)
(11/17)
WR01_SIM
RDX_SIM
D24A00_SIM
D25A01_SIM
D26A02_SIM
D27A03_SIM
D28A04_SIM
D29A05_SIM
D30A06_SIM
D31A07_SIM
AUDAI
AUENI
AUDAO
AUENO
@021
(4/17)
KCLK
EBS[0]
EBS[1]
EBS[2]
EBS[3]
EBS[4]
EBS[5]
EBS[6]
EBS[7]
R2807
0
ERDY
ERE
DJCLK
BS[0]
BS[1]
BS[2]
BS[3]
BS[4]
BS[5]
BS[6]
BS[7]
BSEN
C2803
0.1u
C2805
0.01u
C2804
0.1u
C2806
0.01u
C2808
0.1u
C2809
0.1u
C2807
4.7u
(17/17)
A_2.8V
FB2803
A_2.8V
(16/17)
D_2.8V_1
D_1.5V
FB2802
D_2.8V_1
R2813
0
D_1.5V
C2801
4.7u
C2802
4.7u
REG_GND
@022
(5/17)
CK27MF02_E
@023
(5/17)
IC_1801_PCRERR
IC_1801_SRCH
IC_1801_FLD27MF
R2801
100
C2811
0.1u
C2812
0.1u
C2814
0.01u
R2809
0
R2808
0
R2811
R2812
C2810
0.01u
R2804
47k
R2806
1k
R2805
1k
C2813
0.01u
C2815
0.01u
C2816
0.1u
R2803
0
C2817
0.01u
C2818
0.01u
C2822
0.1u
C2819
0.01u
C2820
0.01u
C2821
0.1u
JTAG
XPEN1
DIR1
XPACC1
PD17
PD16
PD15
PD14
PD13
PD12
PD11
PD10
PCLK1
@024
(3/17)
SCWIN_IC_2801
XCS_IC_2801
XCS_IC_2801_2
XRST_IC_2801_1
XRST_IC_2801_0
@025
(11/17)
DXXA07_SIM
DXXA06_SIM
DXXA05_SIM
DXXA04_SIM
DXXA03_SIM
DXXA02_SIM
DXXA01_SIM
DXXA00_SIM
DXXA10_SIM
@026
(3/17)
(11/17)
DXXA09_SIM
DXXA08_SIM
@006
(1/17)
(3/17)
(5/17)
(11/17)
FRRV
@007
(1/17)
(3/17)
(5/17)
(11/17)
(12/17)
TRRT
@009
(1/17)
(3/17)
(11/17)
DRP
@008
(1/17)
(5/17)
(11/17)
ALE_SIM
@004
(1/17)
(4/17)
(5/17)
(11/17)
RECDT
RECCK
RECA1
RECA2
@027
(10/17)
VITDT
VITCK
CRECDT
CRECCK
CRECA1
CRECA2
@013
(1/17)
05

VD-036 BOARD (3/17)

HDV/DV i.LINK INTERFACE

XX MARK: NO MOUNT

▲: Voltage measurement of the CSP ICs and the Transistors with ▲ mark, are not possible.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I
J
K
IC3201
HDV/DV i.LINK INTERFACE
IC3201
SN104286ZHZR
▲
TRRT
@009
(1/17)
(2/17)
(11/17)
FRRV
@007
(1/17)
(2/17)
(5/17)
(11/17)
(12/17)
@011
(1/17)
FCLR
DIR
TRCKO
LBUS3
LBUS2
LBUS1
LBUS0
XENA
XACC
OFR2
C3215
0.1u
R3212
100k
R3213
100k
C3217
0.1u
R3214
100k
R3215
100k
R3211
0
CL3201
CL3202
DIR1
FR1
PCLK1
R3222
0
PD17
PD16
PD15
PD14
PD13
PD12
PD11
PD10
@024
(2/17)
XPEN1
XPACC1
CL3203
CL3204
D31A07_SIM
D30A06_SIM
D29A05_SIM
D28A04_SIM
D27A03_SIM
D26A02_SIM
D25A01_SIM
D24A00_SIM
C3219
0.1u
C3220
0.1u
DXXA11_SIM
@030
(11/17)
DXXA09_SIM
DXXA08_SIM
@006
(1/17)
(2/17)
(5/17)
(11/17)
DXXA10_SIM
DXXA07_SIM
DXXA06_SIM
DXXA05_SIM
DXXA04_SIM
DXXA03_SIM
DXXA02_SIM
DXXA01_SIM
DXXA00_SIM
@026
(2/17)
(11/17)
XCS_IC_3201
RDX_SIM
WR01_SIM
@005
(1/17)
(2/17)
(4/17)
(5/17)
(11/17)
XIC_3201_INT
R3225
100k
R3226
100k
A3
A2
A1
VSS
FCLR2
DIR2
TRKP2
VDD1.8
OFR2
FR2
PCLK2
PD27
PD26
VDD3.3
PD25
PD24
PD23
PD22
PD21
PD20
XPEN2
XPACC2
FCLR1
DIR1
TRKP1
OFR1
FR1
PCLK1
VSS
PD17
PD16
PD15
PD14
PD13
VDD3.3
PD12
PD11
PD10
A4
B1
B2
B3
VDD3.3
B4
C1
C2
C3
VSS
C4
D1
D2
D3
D4
VDD1.8
VSS
PRDBIASEN
CNA
VDDPHYA
VSSPHYA
TPBNO
TPBPO
TPANO
TPAPO
TPBIASO
VSSPHYC
R0
R1
VDDPHYC
FILTER0
FILTER1
VDDAHVPHYPLL
VSSAPHYPLL
XI
XO
XRESET
XPEN1
XPACC1
HD7
HD6
VSS
HD5
HD4
HD3
VDD3.3
HD2
HD1
HD0
HDA11
HDA10
HDA9
HDA8
VSS
HDA7
HDA6
VDD1.8
HDA5
HDA4
HDA3
HDA2
HDA1
HDA0
XCS
ALE
XRD
XRW
XINT0
XINTI2
VSS
XINTI1
HMLT
ACP2
TESTMODE/ACP1
TESTMODE/ACP0
CNC
MSPCTL
MSP200
MCLK
PLL_ON
TDIA
TDOA
VDD1.8
TMSA
TDID
TDOD
TMSD
TCLK
XTRST
VSS
TEST0/UA1CTS
TEST1/UA1RTS
TEST2/XCS
VDD3.3
TEST3/XWR
TEST4/XRD
TEST5/A0
TEST6/A1
VSS
TEST7/A2
TEST8/DA0
TEST9/DA1
TEST10/DA2
TEST11/D3
TEST12/D4
TEST13/D5
VSS
TEST14/D6
TEST15/D7
TEST16/TMRRST/EMLT
RTEV0/TESTMODE
RTEV1
VDD3.3
C3211
0.1u
C3212
0.1u
C3208
0.1u
CN3201 7P
NTPB
TPB
GND(B)
GND
GND(A)
TPA
NTPA
1
2
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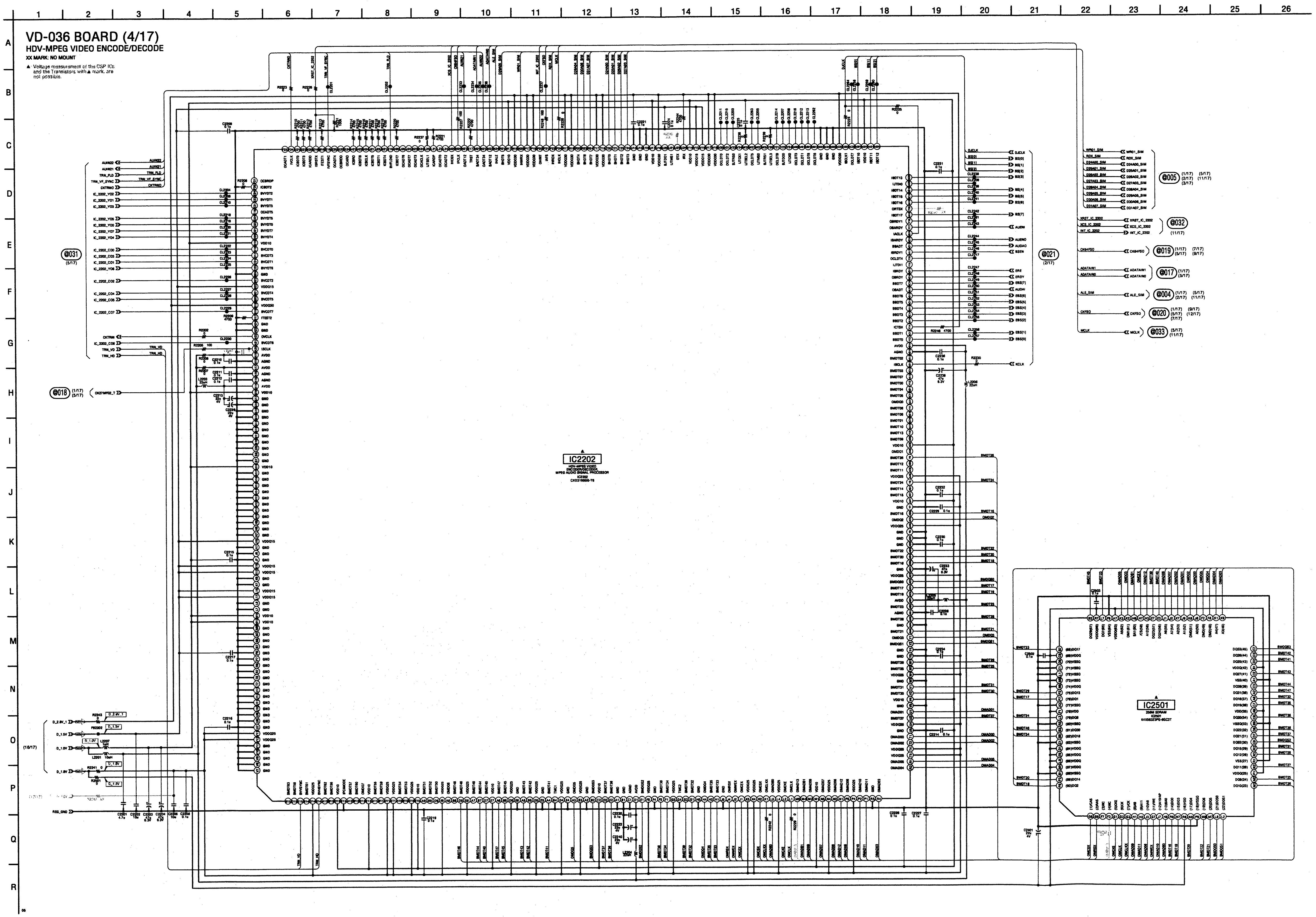
4
5
6
7
JK-309
CN742
Thruogh the Harness (DV-068)
(Page 4-27)
LF3201
R3201
56
±0.5%
R3203
56
±0.5%
R3205
56
±0.5%
R3206
56
±0.5%
R3207
6200
±0.5%
R3208
180
±0.5%
C3202
220p
C3205
1u
R3209
1M ±0.5%
R3202
10k
±0.5%
R3204
10k
±0.5%
C3209
0.1u
C3214 0.1u
C3210
0.1u
C3206
12p
X3201
24.576MHz
C3207
12p
(17/17)
A_2.8V
L3201
10uH
A_2.8V
(16/17)
D_2.8V_1
D_1.8V
FB3202
FB3201
D_2.8V_1
D_1.8V
C3201
4.7u
C3203
4.7u
C3204
10u
C3218
0.1u
C3213
XX
C3216
0.1u
R3216
100k
R3217
100k
R3218
100k
R3219
100k
R3220
100k
R3221
100k
R3223
100k
R3224
100k
REG_GND
@028
(5/17)
(8/17)
(10/17)
(11/17)
XRST_VTR
R3210
0
@029
(11/17)
IC_3201_PLL_ON
OFR2
FR1
XIC_3201_INT
XCS_IC_3201
05

VD-036 BOARD (4/17)

HDV-MPEG VIDEO ENCODE/DECODE

XX MARK: NO MOUNT

▲ Voltage measurement of the CSP ICs and the Transistors with ▲ mark, are not possible.



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A
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K
L
M
N
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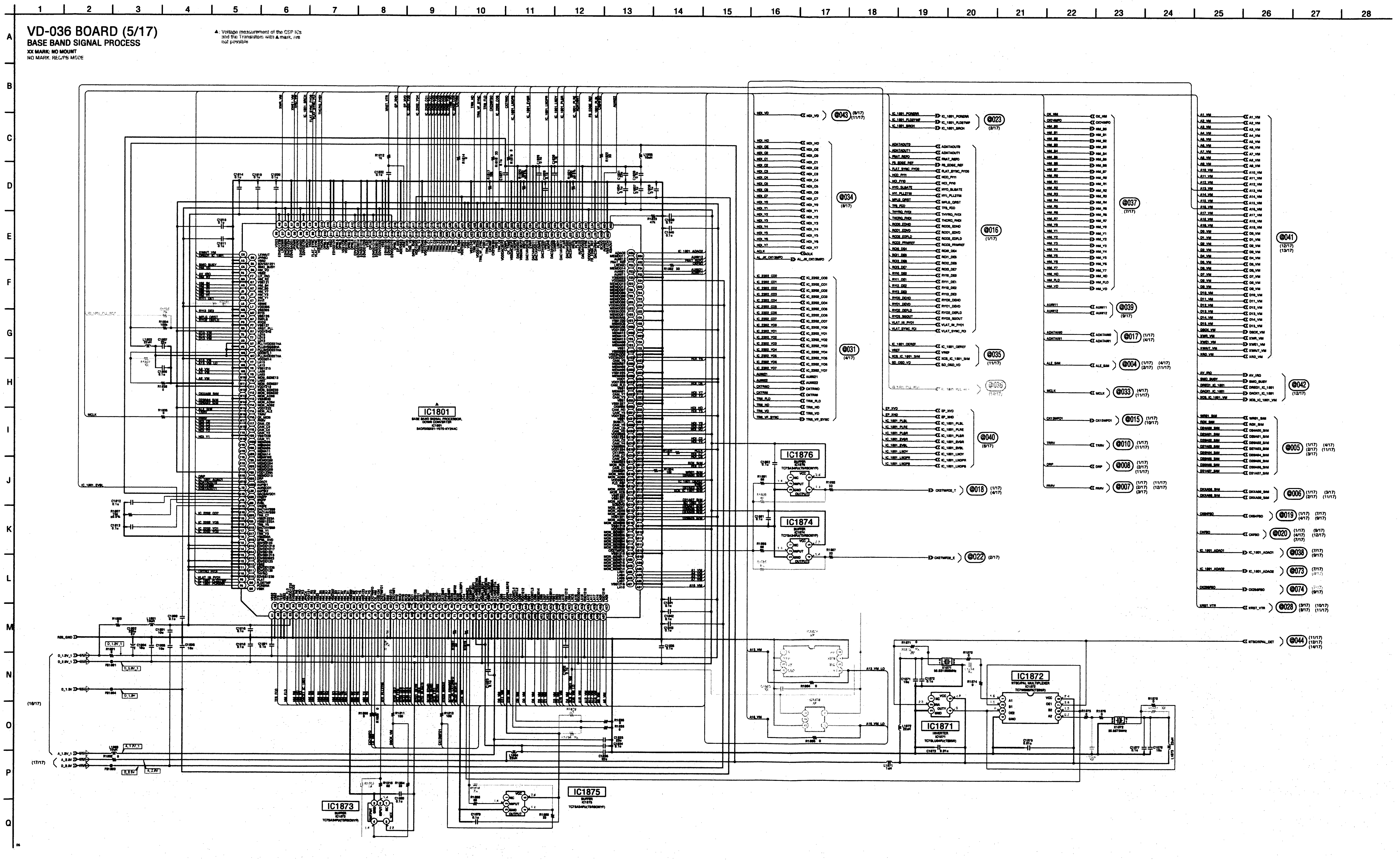
P
Q
R
IC2202
HDV-MPEG VIDEO ENCODER/DECODER, MPEG AUDIO SIGNAL PROCESSOR
IC2202
CXD3195GG-T6
IC2501
256M SDRAM
IC2501
K4X56323PG-8GC3T
@031 (5/17)
@018 (1/17) (5/17)
@021 (2/17)
@005 (1/17) (2/17) (3/17) (5/17) (11/17)
@032 (11/17)
@019 (1/17) (5/17) (7/17) (9/17)
@017 (1/17) (5/17)
@004 (1/17) (2/17) (5/17) (11/17)
@020 (1/17) (5/17) (7/17) (9/17) (12/17)
@033 (5/17) (11/17)
(16/17)

VD-036 BOARD (5/17)

BASE BAND SIGNAL PROCESS

XX MARK: NO MOUNT
NO MARK: REC/PB MODE

▲: Voltage measurement of the CSP ICs and the Transistors with ▲ mark, are not possible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A
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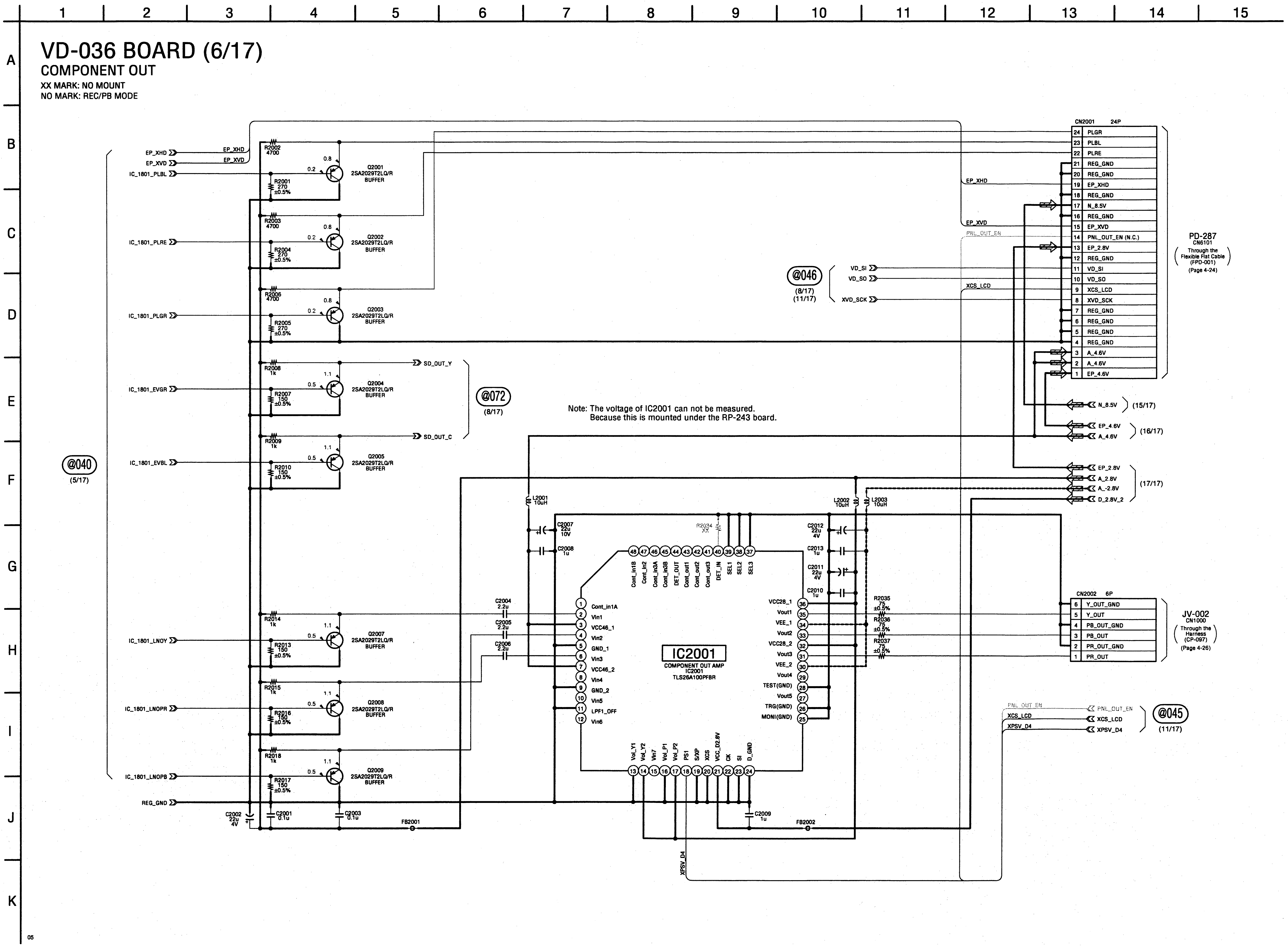
Q
IC1801
BASE BAND SIGNAL PROCESSOR, DOWN CONVERTER
IC1801
S4DF00GSX01-Y070-KY2K4C
IC1876
BUFFER
IC1876
TC7SA34FU(TE85ONYF)
IC1874
BUFFER
IC1874
TC7SA34FU(TE85ONYF)
IC1872
NTSC/PAL MULTIPLEXER
IC1872
TC7WB66FK(TE85R)
IC1871
INVERTER
IC1871
TC7SLU04FU(TE85R)
IC1873
BUFFER
IC1875
BUFFER
CKTRIN
TRN_FLD
TRN_HD
TRN_VD
TRN_VF_SYNC
X1871
L1871
1uH
L1872
22uH
C1871
10u
C1872
0.1u
C1873
0.01u
C1875
0.01u
R1871
R1873
R1874
R1875
R1876
@043
@034
@031
@023
@016
@035
@040
@037
@039
@017
@004
@033
@015
@010
@008
@007
@041
@042
@005
@006
@019
@020
@038
@073
@074
@028
@044
@018
@022
(18/17)
(17/17)

VD-036 BOARD (6/17)

COMPONENT OUT

XX MARK: NO MOUNT
NO MARK: REC/PB MODE



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J K
EP_XHD
EP_XVD
IC_1801_PLBL
IC_1801_PLRE
IC_1801_PLGR
IC_1801_EVGR
IC_1801_EVBL
IC_1801_LNOY
IC_1801_LNOPR
IC_1801_LNOPB
REG_GND
@040
(5/17)
R2002 4700
R2001 270 ±0.5%
Q2001 2SA2029T2LQ/R BUFFER
R2003 4700
R2004 270 ±0.5%
Q2002 2SA2029T2LQ/R BUFFER
R2006 4700
R2005 270 ±0.5%
Q2003 2SA2029T2LQ/R BUFFER
R2008 1k
R2007 150 ±0.5%
Q2004 2SA2029T2LQ/R BUFFER
R2009 1k
R2010 150 ±0.5%
Q2005 2SA2029T2LQ/R BUFFER
R2014 1k
R2013 150 ±0.5%
Q2007 2SA2029T2LQ/R BUFFER
R2015 1k
R2016 150 ±0.5%
Q2008 2SA2029T2LQ/R BUFFER
R2018 1k
R2017 150 ±0.5%
Q2009 2SA2029T2LQ/R BUFFER
0.8
0.2
1.1
0.5
SD_OUT_Y
SD_OUT_C
@072
(8/17)
C2002 22u 4V
C2001 0.1u
C2003 0.1u
FB2001
FB2002
C2004 2.2u
C2005 2.2u
C2006 2.2u
L2001 10uH
L2002 10uH
L2003 10uH
C2007 22u 10V
C2008 1u
R2034 XX
C2012 22u 4V
C2013 1u
C2011 22u 4V
C2010 1u
C2009 1u
R2035 75 ±0.5%
R2036 75 ±0.5%
R2037 75 ±0.5%
IC2001
COMPONENT OUT AMP
IC2001
TLS26A100PF8R
1 Cont_in1A
2 Vin1
3 VCC46_1
4 Vin2
5 GND_1
6 Vin3
7 VCC46_2
8 Vin4
9 GND_2
10 Vin5
11 LPF1_OFF
12 Vin6
13 Vol_Y1
14 Vol_Y2
15 Vin7
16 Vol_P1
17 Vol_P2
18 PS1
19 S/XP
20 XCS
21 VCC_D2.8V
22 CK
23 SI
24 D_GND
25 MONI(GND)
26 TRG(GND)
27 Vout5
28 TEST(GND)
29 Vout4
30 VEE_2
31 Vout3
32 VCC28_2
33 Vout2
34 VEE_1
35 Vout1
36 VCC28_1
37 SEL3
38 SEL2
39 SEL1
40 DET_IN
41 Cont_out3
42 Cont_out2
43 Cont_out1
44 DET_OUT
45 Cont_in3B
46 Cont_in3A
47 Cont_in2
48 Cont_in1B
XPSV_D4
@046
(8/17)
(11/17)
VD_SI
VD_SO
XVD_SCK
EP_XHD
EP_XVD
PNL_OUT_EN
XCS_LCD
CN2001 24P
24 PLGR
23 PLBL
22 PLRE
21 REG_GND
20 REG_GND
19 EP_XHD
18 REG_GND
17 N_8.5V
16 REG_GND
15 EP_XVD
14 PNL_OUT_EN (N.C.)
13 EP_2.8V
12 REG_GND
11 VD_SI
10 VD_SO
9 XCS_LCD
8 XVD_SCK
7 REG_GND
6 REG_GND
5 REG_GND
4 REG_GND
3 A_4.6V
2 A_4.6V
1 EP_4.6V
PD-287
CN6101
Through the Flexible Flat Cable (FPD-001)
(Page 4-24)
N_8.5V
(15/17)
EP_4.6V
A_4.6V
(16/17)
EP_2.8V
A_2.8V
A_-2.8V
D_2.8V_2
(17/17)
CN2002 6P
6 Y_OUT_GND
5 Y_OUT
4 PB_OUT_GND
3 PB_OUT
2 PR_OUT_GND
1 PR_OUT
JV-002
CN1000
Through the Harness (CP-097)
(Page 4-26)
PNL_OUT_EN
XCS_LCD
XPSV_D4
@045
(11/17)
05

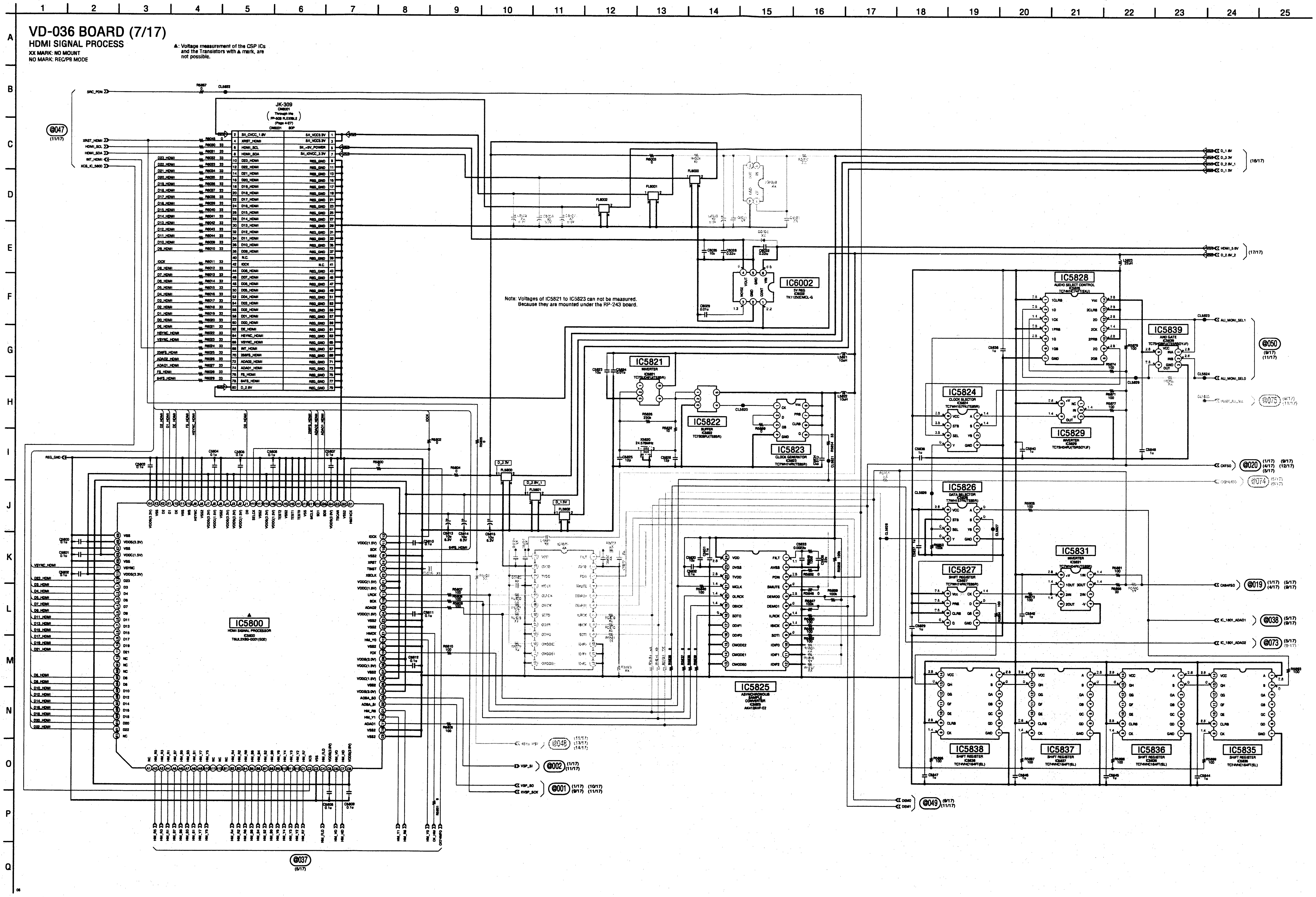
Note: The voltage of IC2001 can not be measured.
Because this is mounted under the RP-243 board.

VD-036 BOARD (7/17)

HDMI SIGNAL PROCESS

XX MARK: NO MOUNT
NO MARK: REC/PB MODE

▲: Voltage measurement of the CSP ICs and the Transistors with ▲ mark, are not possible.



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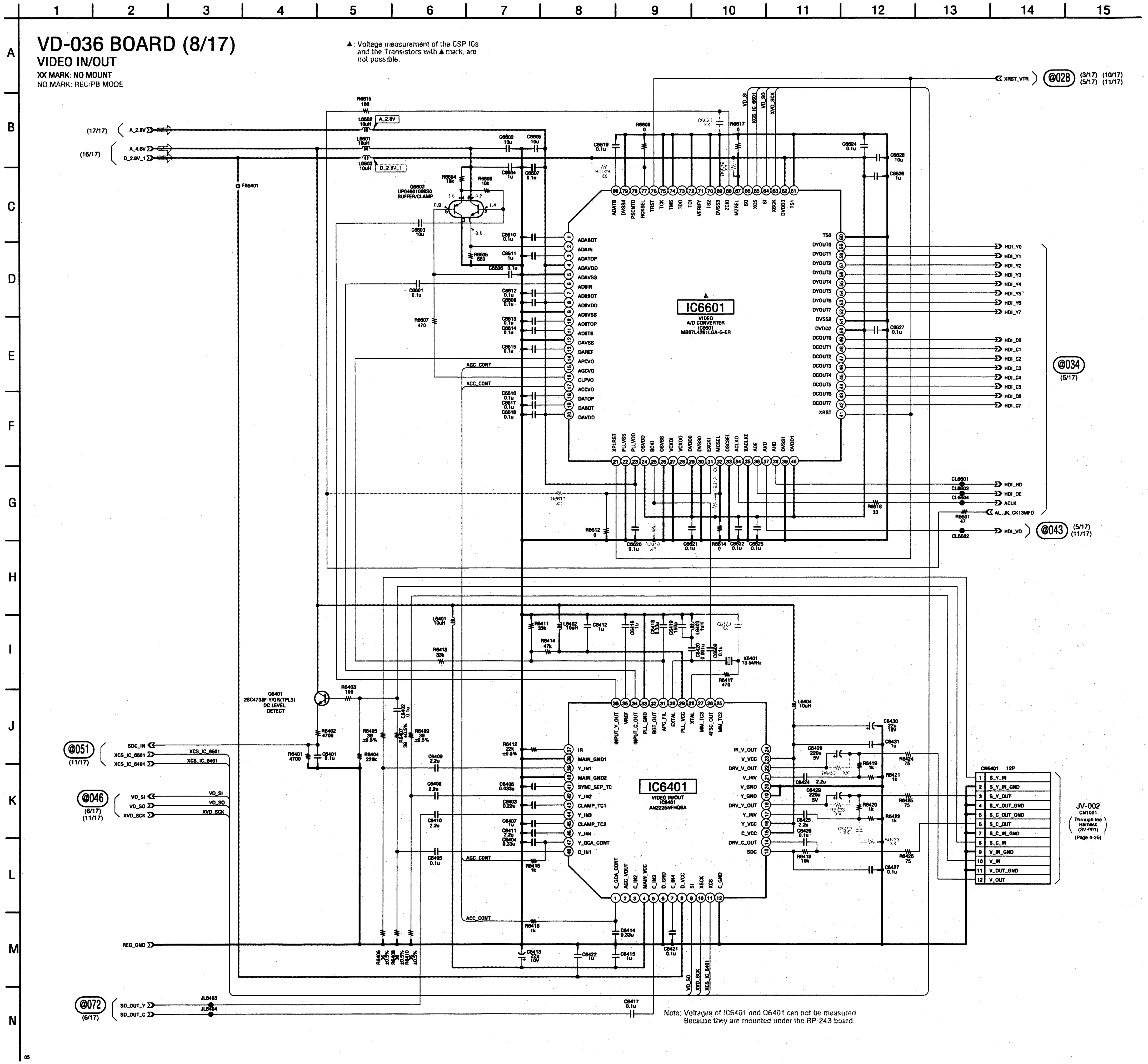
Q
JK-309
IC5800
HDMI SIGNAL PROCESSOR
IC5821
INVERTER
IC5822
BUFFER
IC5823
CLOCK GENERATOR
IC5824
CLOCK SELECTOR
IC5825
ASYNCHRONOUS SAMPLE CONVERTER
IC5826
DATA SELECTOR
IC5827
SHIFT REGISTER
IC5828
AUDIO SELECT CONTROL
IC5829
INVERTER
IC5831
INVERTER
IC5835
SHIFT REGISTER
IC5836
SHIFT REGISTER
IC5837
SHIFT REGISTER
IC5838
SHIFT REGISTER
IC5839
AND GATE
IC6002
5V REG
SRC_PON
XRST_HDMI
HDMI_SCL
HDMI_SDA
INT_HDMI
XCS_IC_5800
REG_GND
D_1.8V
D_3.3V
D_2.8V_1
D_1.5V
HDMI_5.8V
D_2.8V_2
AU_MONI_SEL1
AU_MONI_SEL0
CK64FS0
IC_1801_ADAO1
IC_1801_ADAO2
VSP_SI
VSP_SO
XVSP_SCK
DEM0
DEM1
@047
(11/17)
(16/17)
(17/17)
@050
(9/17)
(11/17)
@075
@020
(1/17)
(4/17)
(9/17)
(12/17)
(5/17)
@074
@019
@038
@073
@048
@002
@001
@049
@037
(5/17)
Note: Voltages of IC5821 to IC5823 can not be measured. Because they are mounted under the RP-243 board.

VD-036 BOARD (8/17)

VIDEO IN/OUT

XX MARK: NO MOUNT
NO MARK: REC/PB MODE

▲: Voltage measurement of the CSP ICs and the Transistors with ▲ mark, are not possible.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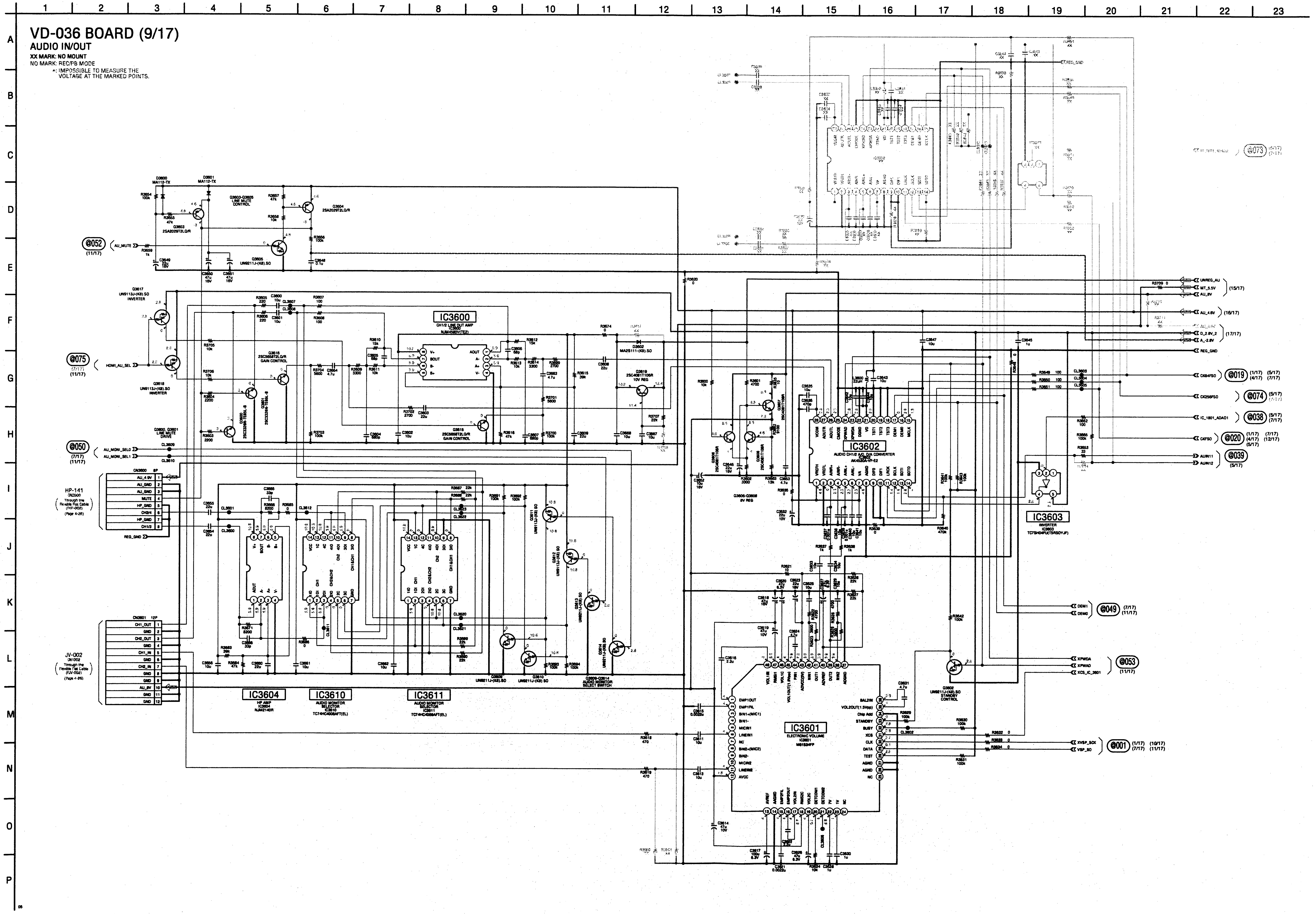
I
J
K
L
M
N
(17/17) A_2.8V
(16/17) A_4.6V
D_2.8V_1
R6615 100
L6602 10uH A_2.8V
L6601 10uH
L6603 10uH D_2.8V_1
FB6401
Q6603 UP04601008S0 BUFFER/CLAMP
XRST_VTR
@028 (3/17) (10/17) (5/17) (11/17)
VD_SI
XCS_IC_6601
VD_SO
XVD_SCK
R6608 0
R6617 0
C6619 0.1u
C6624 0.1u
C6628 10u
C6626 1u
C6627 0.1u
IC6601
VIDEO A/D CONVERTER
IC6601
MB87L4261LGA-G-ER
ADATB
DVSS4
PSCNTO
RCKSEL
TRST
TCK
TMS
TDO
TDI
VERIFY
TS2
DVSS3
ZCKI
MZSEL
SO
XCS
SI
XSCK
DVDD3
TS1
ADABOT
ADAIN
ADATOP
ADAVDD
ADAVSS
AD8IN
AD8BOT
AD8VDD
AD8VSS
AD8TOP
AD8TB
DAVSS
DAREF
APCVO
AGCVO
CLPVO
ACCVO
DATOP
DABOT
DAVDD
TS0
DYOUT0
DYOUT1
DYOUT2
DYOUT3
DYOUT4
DYOUT5
DYOUT6
DYOUT7
DVSS2
DVDD2
DCOUT0
DCOUT1
DCOUT2
DCOUT3
DCOUT4
DCOUT5
DCOUT6
DCOUT7
XRST
XPLRST
PLLVSS
PLLVDD
OSVDD
BCKI
OSVSS
VCXOI
VCXOO
DVDD0
DVSS0
EXCKI
MCSEL
OSCSEL
ACLKO
XACLKE
AOE
AVD
AHD
DVSS1
DVDD1
HDI_Y0
HDI_Y1
HDI_Y2
HDI_Y3
HDI_Y4
HDI_Y5
HDI_Y6
HDI_Y7
HDI_C0
HDI_C1
HDI_C2
HDI_C3
HDI_C4
HDI_C5
HDI_C6
HDI_C7
@034 (5/17)
CL6601 HDI_HD
CL6603 HDI_OE
CL6604 ACLK
R6601 47 AL_JK_CK13MFO
CL6602 HDI_VD
@043 (5/17) (11/17)
R6618 33
R6612 0
AGC_CONT
ACC_CONT
Q6401 2SC4738F-Y/GR(TPL3) DC LEVEL DETECT
R6403 100
R6402 4700
R6401 4700
C6401 0.1u
R6404 220k
L6401 10uH
R6411 33k
R6414 47k
R6413 33k
L6402 10uH
C6412 1u
L6403 10uH
X6401 13.5MHz
R6417 470
L6404 10uH
IC6401
VIDEO IN/OUT
IC6401
AN2225NFHQBA
INPUT_Y_OUT
VREF
INPUT_C_OUT
PLL_GND
BGT_OUT
APC_FIL
EXTAL
PLL_VCC
XTAL
MM_TC3
4FSC_OUT
MM_TC2
IR
MAIN_GND1
Y_IN1
MAIN_GND2
SYNC_SEP_TC
Y_IN2
CLAMP_TC1
Y_IN3
CLAMP_TC2
Y_IN4
Y_GCA_CONT
C_IN1
IR_V_OUT
V_VCC
DRV_V_OUT
V_INV
V_GND
Y_GND
DRV_Y_OUT
Y_INV
Y_VCC
C_VCC
DRV_C_OUT
SDC
C_GCA_CONT
AGC_VOUT
C_IN2
MAIN_VCC
C_IN3
D_GND
C_IN4
D_VCC
SI
XSCK
XCS
C_GND
R6418 10k
C6414 0.33u
C6421 0.1u
C6413 22u 10V
C6422 1u
C6415 1u
C6417 0.1u
CN6401 12P
1 S_Y_IN
2 S_Y_IN_GND
3 S_Y_OUT
4 S_Y_OUT_GND
5 S_C_OUT_GND
6 S_C_OUT
7 S_C_IN_GND
8 S_C_IN
9 V_IN_GND
10 V_IN
11 V_OUT_GND
12 V_OUT
JV-002 CN1001 (Through the Harness (SV-001)) (Page 4-26)
@051 (11/17)
SDC_IN
XCS_IC_6601
XCS_IC_6401
@046 (6/17) (11/17)
VD_SI
VD_SO
XVD_SCK
REG_GND
@072 (6/17)
SD_OUT_Y
SD_OUT_C
JL6403
JL6404
VD_SO
XVD_SCK
XCS_IC_6401

Note: Voltages of IC6401 and Q6401 can not be measured.
Because they are mounted under the RP-243 board.

VD-036 BOARD (9/17)

AUDIO IN/OUT

XX MARK: NO MOUNT
NO MARK: REC/PB MODE
*: IMPOSSIBLE TO MEASURE THE
VOLTAGE AT THE MARKED POINTS.

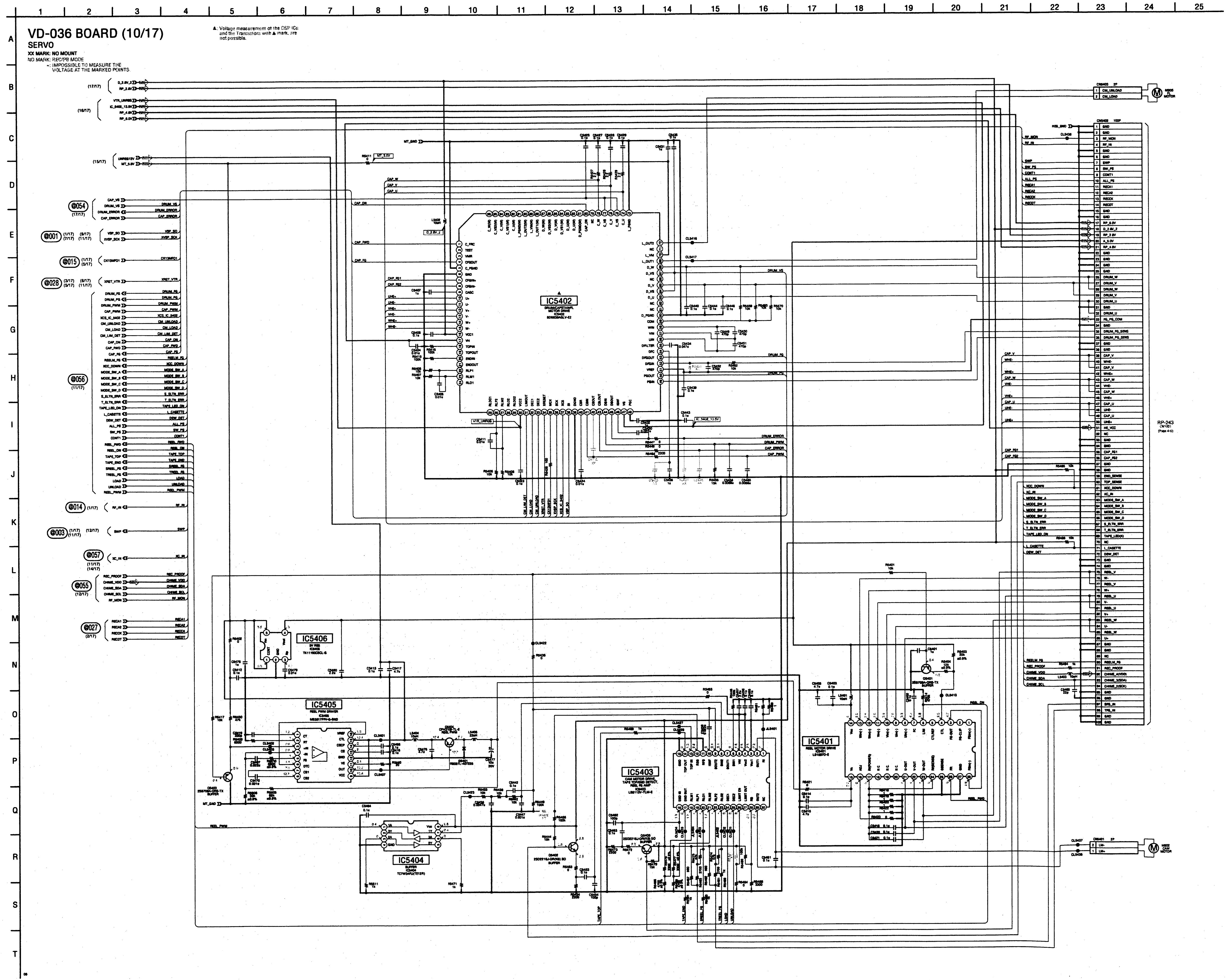

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
A B C D E F G H I J K L M N O P
IC3600
CH1/2 LINE OUT AMP
IC3600
NJM4580V(TE2)
IC3602
AUDIO CH1/2 A/D, D/A CONVERTER
AK4530A-VF-E2
IC3603
INVERTER
IC3603
TC7SH04FU(TE85R,SOY,F)
IC3601
ELECTRONIC VOLUME
IC3601
M61534FP
IC3604
HP AMP
IC3604
NJM2140R
IC3610
AUDIO MONITOR SELECTOR
IC3610
TC74HC4066AFT(EL)
IC3611
AUDIO MONITOR SELECTOR
IC3611
TC74HC4066AFT(EL)
D3600 MA112-TX
D3601 MA112-TX
Q3603-Q3605 LINE MUTE CONTROL
Q3604 2SA2029T2LQ/R
Q3603 2SA2029T2LQ/R
Q3605 UN9211J-(K8).SO
Q3617 UN9113J-(K8).SO INVERTER
Q3618 UN9113J-(K8).SO INVERTER
Q3618 2SC5658T2LQ/R GAIN CONTROL
Q3615 2SC5658T2LQ/R GAIN CONTROL
Q3600, Q3601 LINE MUTE DRIVE
D3602 MA2S111-(K8).SO
Q3619 2SC4081T106R 10V REG
Q3606-Q3608 8V REG
Q3602 UN9211J-(K8).SO STANDBY CONTROL
Q3609-Q3614 AUDIO MONITOR SELECT SWITCH
@052 (11/17) AU_MUTE
@075 (7/17) (11/17) HDMI_AU_SEL
@050 (7/17) (11/17) AU_MONI_SEL0 AU_MONI_SEL1
HP-141 CN3600 8P (Through the Flexible Flat Cable (FP-002)) (Page 4-26)
AU_4.9V AU_GND AU_GND MUTE HP_GND CH2/4 HP_GND CH1/3
REG_GND
JV-002 CN3601 12P (Through the Flexible Flat Cable (FJV-002)) (Page 4-26)
CH1_OUT GND CH2_OUT GND CH1_IN GND CH2_IN GND GND AU_8V GND GND
UNREG_AU MT_3.5V AU_8V (15/17)
AU_4.9V (16/17)
D_2.8V_2 A_2.8V (17/17)
REG_GND
CK64FS0 @019 (1/17) (4/17) (5/17) (7/17)
CK256FS0 @074 (5/17)
IC_1801_ADAO1 @038 (5/17) (7/17)
CKFS0 @020 (1/17) (4/17) (5/17) (7/17) (12/17)
AUIN11 AUIN12 @039 (5/17)
@073 (5/17) (7/17)
DEM1 DEM0 @049 (7/17) (11/17)
XPWDA XPWAD XCS_IC_3601 @053 (11/17)
XVSP_SCK XVSP_SO @001 (1/17) (7/17) (10/17) (11/17)

VD-036 BOARD (10/17)

SERVO

XX MARK: NO MOUNT
NO MARK: REC/PB MODE
＊: IMPOSSIBLE TO MEASURE THE VOLTAGE AT THE MARKED POINTS.

▲: Voltage measurement of the CSP ICs and the Transistors with ▲ mark, are not possible.

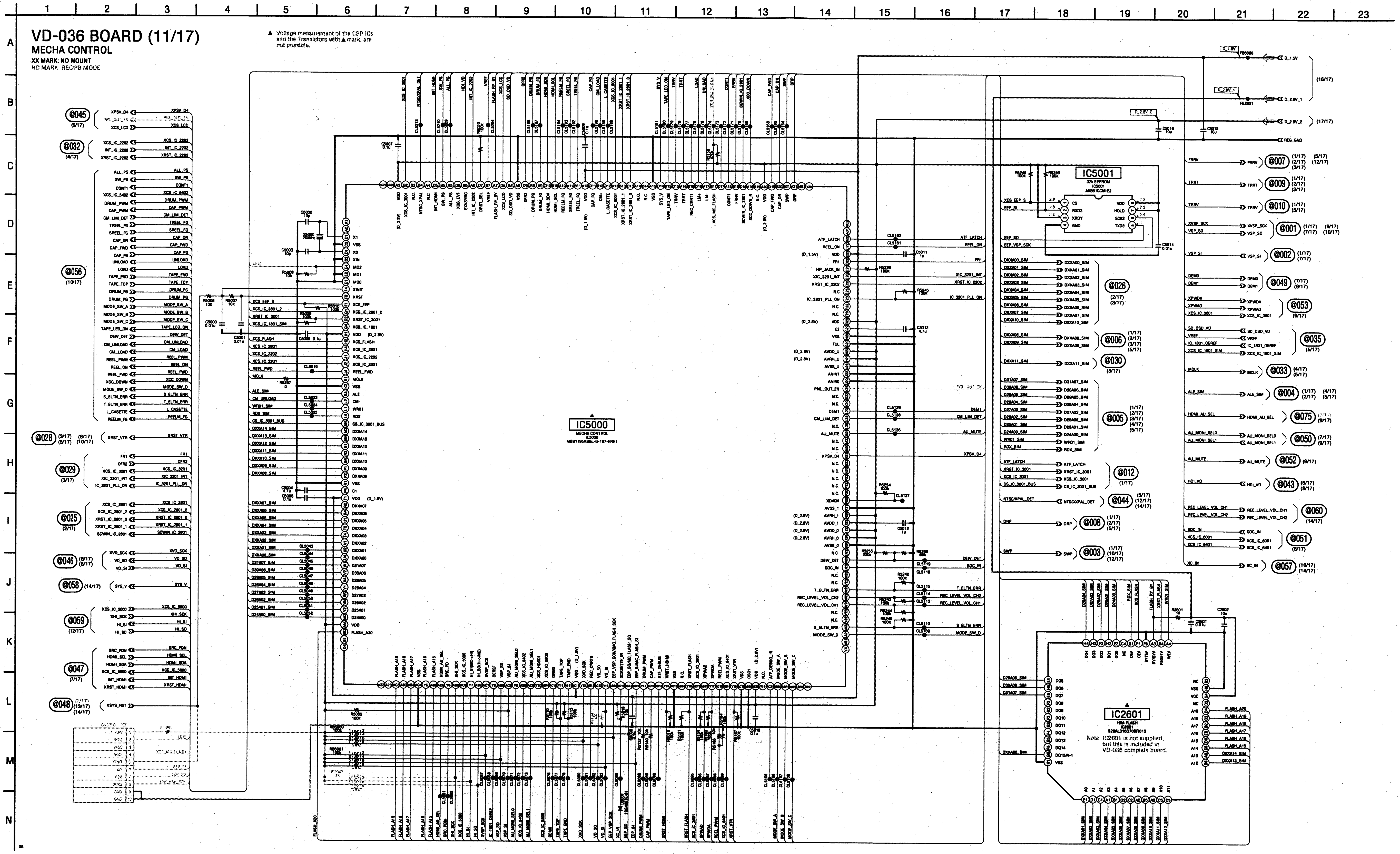

(17/17)
D_2.8V_2
RP_2.8V
(16/17)
VTR_UNREG
IC_5402_13.9V
RP_4.6V
RP_6.0V
IC5402
DRUM/CAPSTAN/FL MOTOR DRIVE
IC5402
BD6639AGLV-E2
IC5406
5V REG
IC5406
TK11150CSCL-G
C5479 0.01u
C5480 2.2u
C5413 0.1u
IC5405
REEL PWM DRIVER
IC5405
MB3817PFV-G-BND
CT
RT
+IN
-IN
FB
DTC
CS1
CS2
VREF
CTL
CSCP
CS
GND
VE
OUT
VCC
IC5404
BUFFER
IC5404
TC7W34FU(TE12R)
C5484 0.1u
1A
3Y
2A
GND
Vcc
1Y
3A
2Y
R5511 1k
R5471 1k
IC5403
CAM MOTOR DRIVE, TAPE TOP/END DETECT, REEL FG AMP
IC5403
LB8112V-TLM-E
CL5427
R5469 1k
C5482 100p
C5483 0.1u
Q5406
2SD2216J-QR(K8).SO
BUFFER
R5473
R5472
GND
TOP OUT
TOP IN
END IN
END OUT
RLM1
IC5401
REEL MOTOR DRIVE
IC5401
LB1887D-E
C5405 4.7u
C5403 0.1u
L5401 10uH
R5421 0
C5414 0.1u
C5415
Vcc
Vs
ADJ
RF(POWER)
CN5403 2P
1 CM_UNLOAD
2 CM_LOAD
M905
FL
MOTOR
CN5402 100P
1 GND
2 GND
3 RF_MON
4 RF_IN
5 GND
6 GND
7 SWP
8 SW_PS
9 CONT1
CL5436
RP-243
CN1001
(Page 4-6)
CL5437
CN5401 2P
2 LM-
1 LM+
CL5438
M902
CAM
MOTOR

VD-036 BOARD (11/17)

MECHA CONTROL

XX MARK: NO MOUNT
NO MARK: REC/PB MODE

▲ Voltage measurement of the CSP ICs and the Transistors with ▲ mark, are not possible.



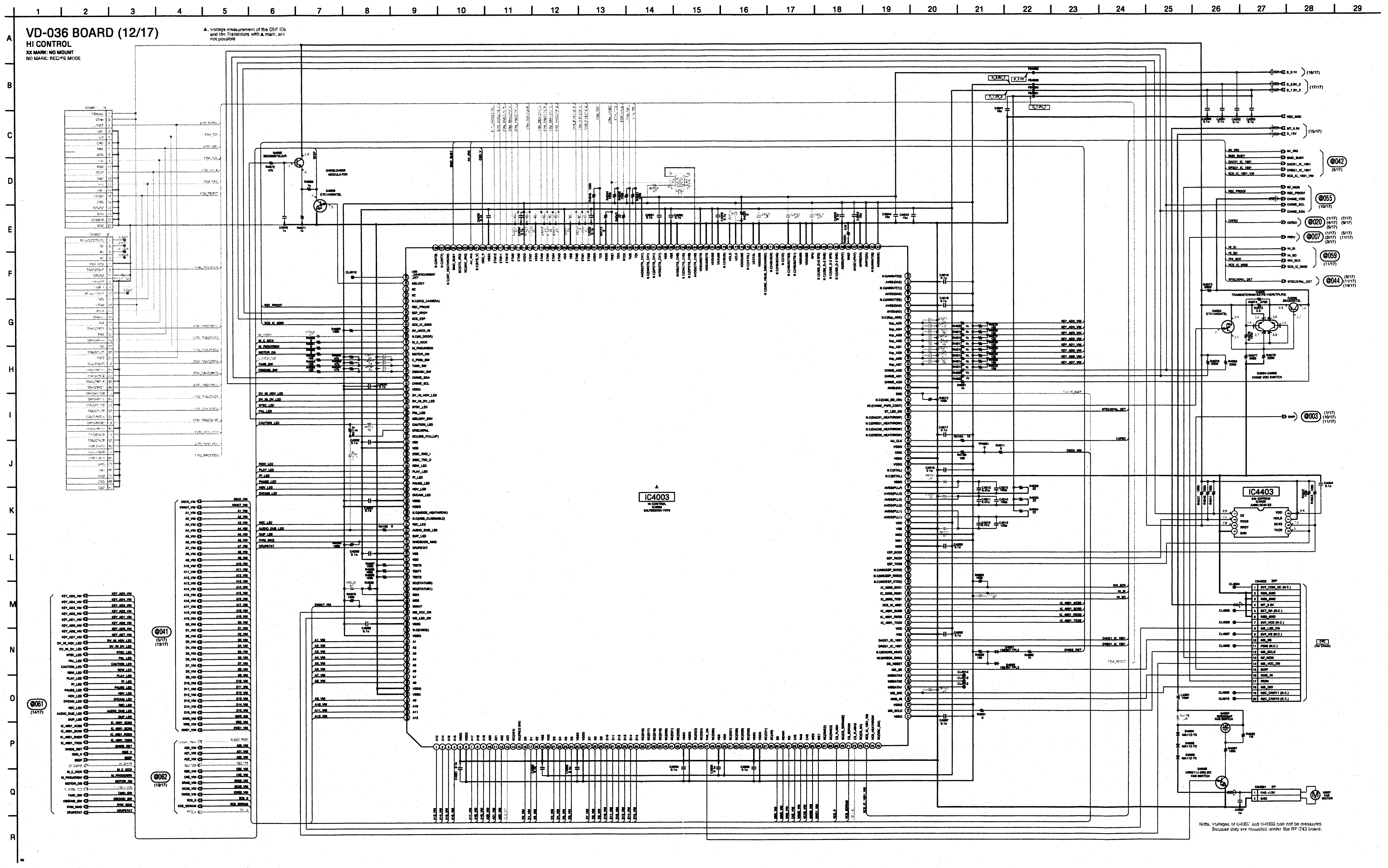
IC5000
MECHA CONTROL
IC5000
MB91195ABGL-G-197-ERE1
IC5001
32k EEPROM
IC5001
AK6510CM-E2
IC2601
16M FLASH
IC2601
S29AL016D70BFI013
Note IC2601 is not supplied, but this is included in VD-036 complete board.

VD-036 BOARD (12/17)

HI CONTROL

XX MARK: NO MOUNT
NO MARK: REC/PB MODE

▲. Voltage measurement of the CSP ICs and the Transistors with ▲ mark, are not possible



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P
Q
R
IC4003
HI CONTROL
IC4403
Q4008
UMB211J-(K8).SO
FAN SWITCH
CN4001 2P
FAN +12V
GND
C4067
1u
M907
FAN
MOTOR
CN4002 20P
TRANSISTOR
CHIME VDD SWITCH
MODULATOR
(1/17)
(10/17)
(11/17)
(13/17)
(14/17)
(15/17)
(16/17)
(17/17)

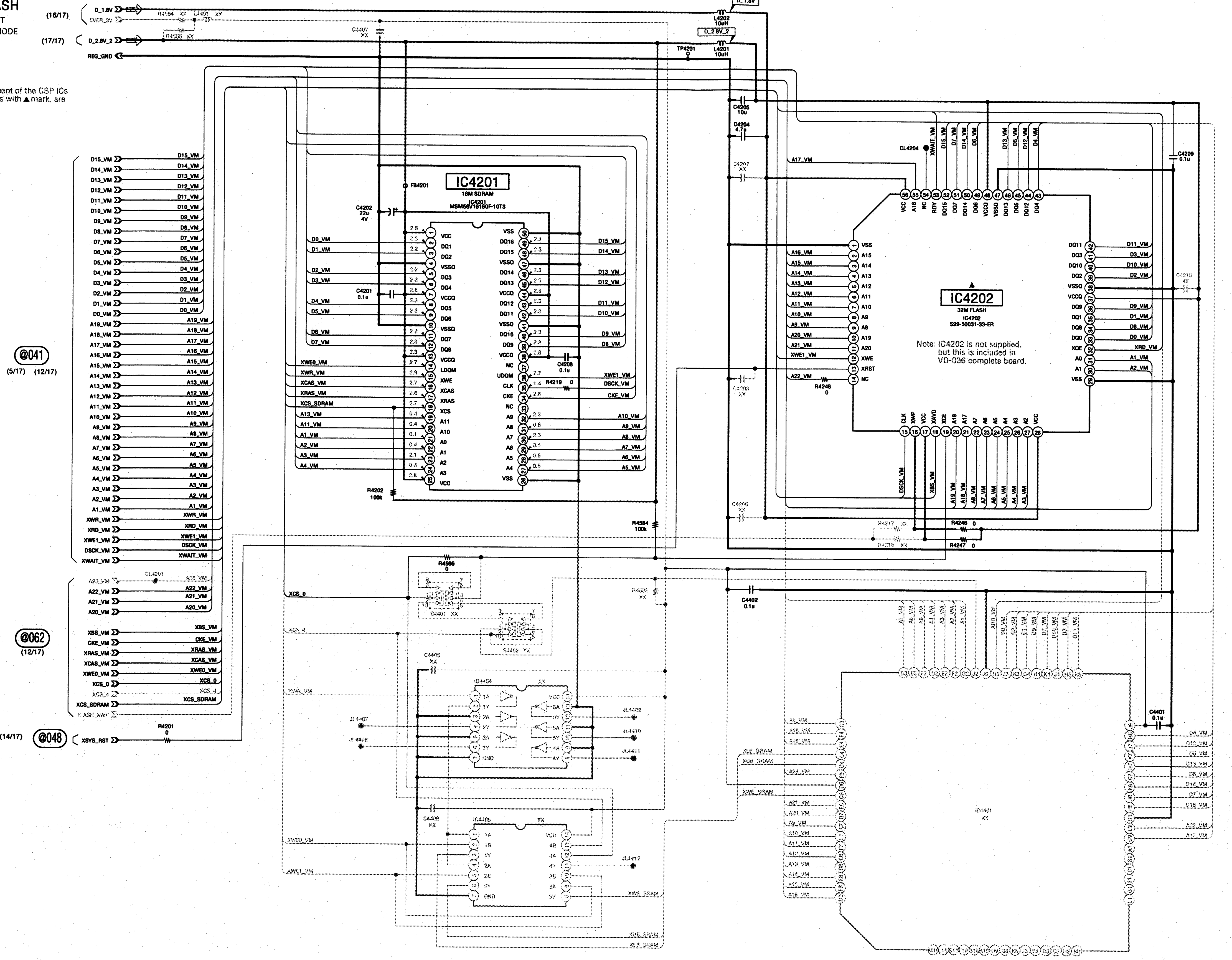
Note. Voltages of Q4007 and Q4008 can not be measured. Because they are mounted under the RP-243 board.

VD-036 BOARD (13/17)

SDRAM, FLASH

XX MARK: NO MOUNT
NO MARK: REC/PB MODE

▲: Voltage measurement of the CSP ICs and the Transistors with ▲ mark, are not possible.



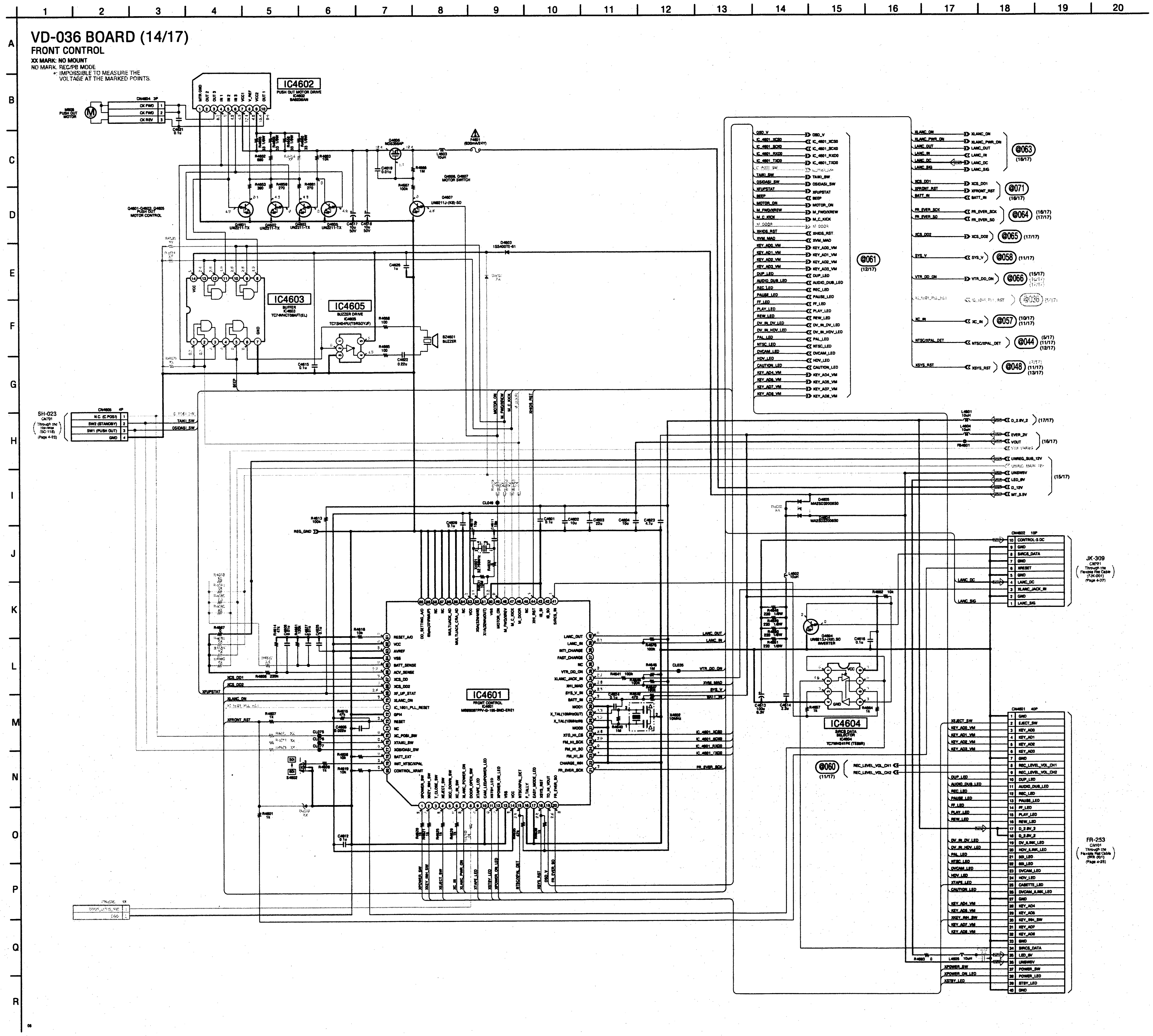
(16/17)
D_1.8V
EVER_3V
R4594 XX
L4401 XX
(17/17)
D_2.8V_2
R4599 XX
REG_GND
C4407 XX
D_1.8V
L4202 10uH
D_2.8V_2
TP4201
L4201 10uH
C4205 10u
C4204 4.7u
C4207 XX
C4209 0.1u
CL4204
FB4201
IC4201
16M SDRAM
IC4201
MSM56V16160F-10T3
C4202 22u 4V
C4201 0.1u
C4208 0.1u
R4219 0
R4202 100k
R4584 100k
IC4202
32M FLASH
IC4202
S99-50031-33-ER
Note: IC4202 is not supplied, but this is included in VD-036 complete board.
C4210 XX
C4203 XX
R4248 0
C4206 XX
R4217 XX
R4216 XX
R4246 0
R4247 0
@041
(5/17) (12/17)
@062
(12/17)
@048
(7/17) (11/17)
(14/17)
XSYS_RST
R4201 0
CL4201
R4586 0
S4401 XX
S4402 XX
R4835 XX
C4402 0.1u
C4405 XX
IC4404 XX
JL4407
JL4408
JL4409
JL4410
JL4411
C4406 XX
IC4405 XX
JL4412
IC4401 XX
C4401 0.1u
XCS_0
XCS_4
XWE_SRAM
XOE_SRAM
XLB_SRAM
XUB_SRAM

- Refer to page 4-3 (English), 4-4 (Japanese) for mark ⚠.

VD-036 BOARD (14/17)

FRONT CONTROL

XX MARK: NO MOUNT
NO MARK: REC/PB MODE
*: IMPOSSIBLE TO MEASURE THE VOLTAGE AT THE MARKED POINTS.



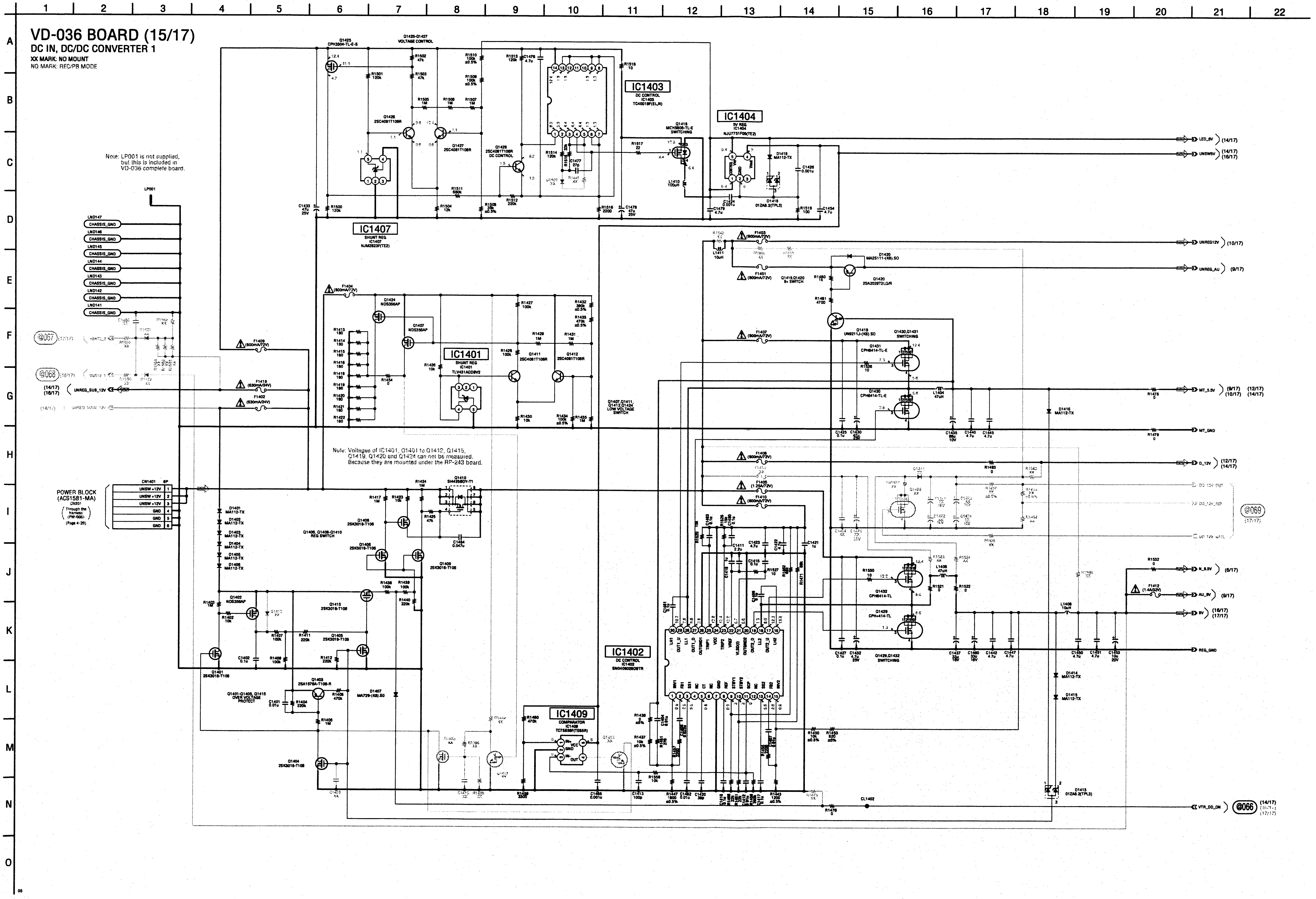
IC4602
PUSH OUT MOTOR DRIVE
IC4603
BUFFER
IC4605
BUZZER DRIVE
IC4601
FRONT CONTROL
IC4604
SIRCS DATA SELECTOR
M906 PUSH OUT MOTOR
CN4604 3P
CK FWD
CK FWD
CK REV
C4621 0.1u
BZ4601 BUZZER
SH-023
JK-309
FR-253
CN4602 10P
CN4601 40P
CN4605 4P
@061
@063
@071
@064
@065
@058
@066
@057
@044
@048
@060

• Refer to page 4-3 (English), 4-4 (Japanese) for mark ⚠.

VD-036 BOARD (15/17)

DC IN, DC/DC CONVERTER 1

XX MARK: NO MOUNT
NO MARK: REC/PB MODE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D
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N
O
Q1425 CPH3304-TL-E-S
Q1425-Q1427 VOLTAGE CONTROL
Q1426 2SC4081T106R
Q1427 2SC4081T106R
Q1428 2SC4081T106R DC CONTROL
IC1403 DC CONTROL IC1403 TC4001BF(ELN)
IC1404 5V REG IC1404 NJU7751F05(TE2)
Q1418 MCH3308-TL-E SWITCHING
IC1407 SHUNT REG IC1407 NJM2823F(TE2)
LP001
LND147
LND146
LND145
LND144
LND143
LND142
LND141
CHASSIS_GND
@067
@068
UNREG_SUB_12V
(14/17)
(16/17)
F1404 (800mA/72V)
F1409 (800mA/72V)
F1419 (630mA/24V)
F1402 (630mA/24V)
Q1424 NDS336AP
Q1407 NDS336AP
IC1401 SHUNT REG IC1401 TLV431ACDBV2
Q1411 2SC4081T106R
Q1412 2SC4081T106R
Q1407,Q1411, Q1412,Q1424 LOW VOLTAGE SWITCH
R1413 180
R1414 180
R1415 180
R1416 180
R1418 180
R1419 180
R1420 180
R1421 180
R1422 180
R1424 1M
R1417 1M
R1423 10k
R1425 47k
Q1410 SI4425BDY-T1
CN1401 6P
UNSW +12V
UNSW +12V
UNSW +12V
GND
GND
GND
1
2
3
4
5
6
POWER BLOCK (ACS1581-MA)
CN201
Through the Harness (PW-066)
(Page 4-29)
D1401 MA112-TX
D1402 MA112-TX
D1403 MA112-TX
D1404 MA112-TX
D1405 MA112-TX
D1406 MA112-TX
Q1406 2SK3018-T106
Q1408 2SK3018-T106
Q1409 2SK3018-T106
Q1406, Q1408-Q1410 REG SWITCH
Q1402 NDS336AP
Q1401 2SK3018-T106
Q1413 2SK3018-T106
Q1405 2SK3018-T106
Q1403 2SA1576A-T106-R
Q1401-Q1405, Q1415 OVER VOLTAGE PROTECT
Q1404 2SK3018-T106
D1407 MA729-(K8).SO
IC1409 COMPARATOR IC1409 TC75S58F(TE85R)
IC1402 DC CONTROL IC1402 SN0408025DBTR
F1403 (800mA/72V)
F1401 (800mA/72V)
Q1419,Q1420 B+ SWITCH
D1420 MA2S111-(K8).SO
Q1420 2SA2029T2LQ/R
Q1419 UN9211J-(K8).SO
F1407 (800mA/72V)
Q1430,Q1431 SWITCHING
Q1431 CPH6414-TL-E
Q1430 CPH6414-TL-E
F1408 (800mA/72V)
F1405 (1.25A/72V)
F1410 (800mA/72V)
Q1432 CPH6414-TL
Q1429 CPH6414-TL
Q1429,Q1432 SWITCHING
L1404 47uH
L1408 47uH
L1409 10uH
D1416 MA112-TX
D1414 MA112-TX
D1415 MA112-TX
D1413 01ZA6.2(TPL3)
D1419 MA112-TX
D1418 01ZA6.2(TPL3)
LED_6V
(14/17)
UNSW5V
(14/17)
(16/17)
UNREG12V
(10/17)
UNREG_AU
(9/17)
MT_5.5V
(9/17)
(12/17)
(10/17)
(14/17)
R1478 0
MT_GND
R1479 0
D_12V
(12/17)
(14/17)
DD_12V_OUT
DD_12V_REF
DD_12V_CAIL
@069
(17/17)
R1532 0
N_8.5V
(6/17)
F1412 (1.4A/32V)
AU_8V
(9/17)
8V
(16/17)
(17/17)
REG_GND
VTR_DD_ON
@066
(14/17)
(17/17)
CL1402
C1433 47u 25V
R1500 120k

Note: LP001 is not supplied, but this is included in VD-036 complete board.

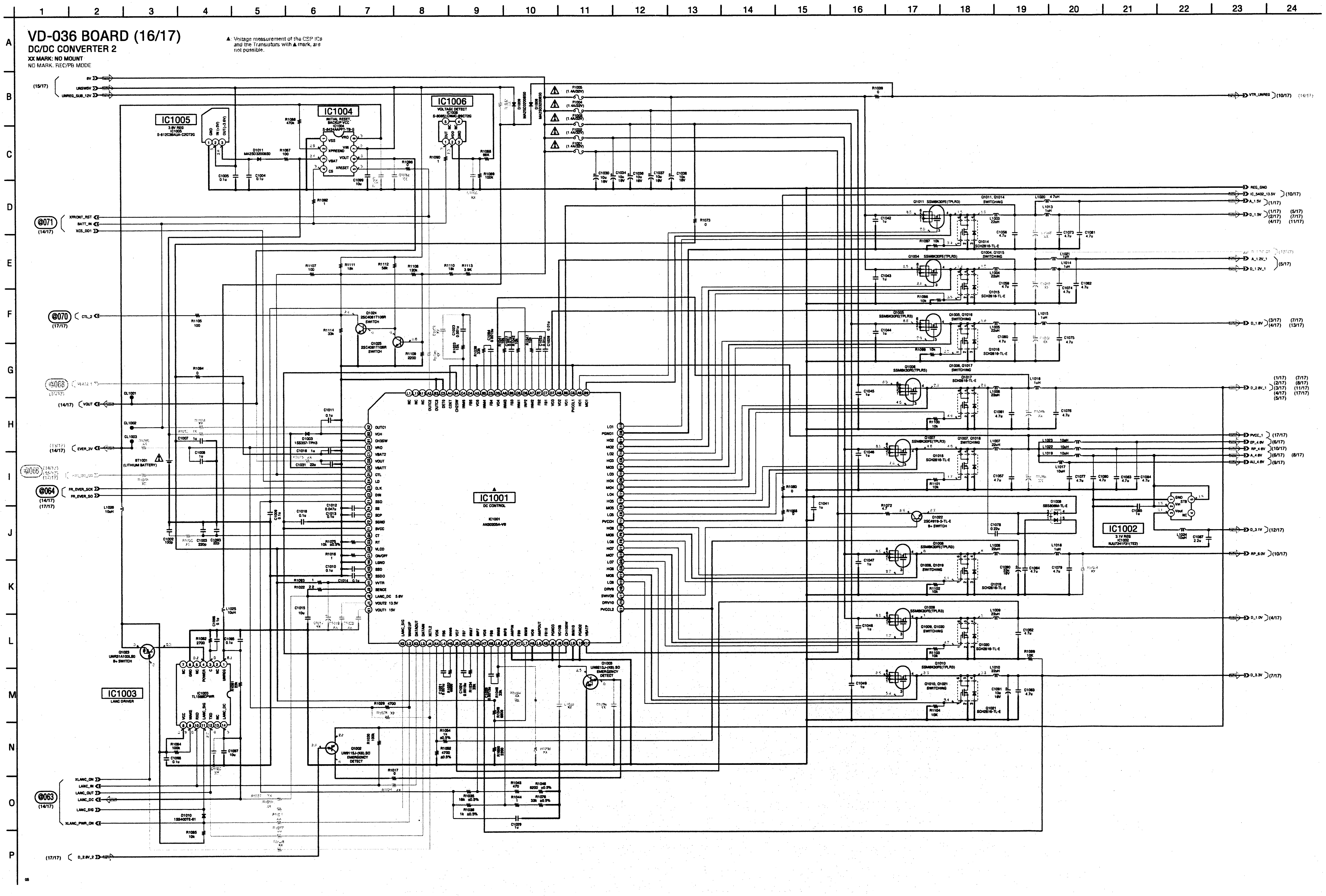
Note: Voltages of IC1401, Q1401 to Q1412, Q1415, Q1419, Q1420 and Q1424 can not be measured. Because they are mounted under the RP-243 board.

- Refer to page 4-3 (English), 4-4 (Japanese) for mark ⚠.

VD-036 BOARD (16/17)
DC/DC CONVERTER 2

XX MARK: NO MOUNT
NO MARK: REC/PB MODE

▲: Voltage measurement of the CSP ICs and the Transistors with ▲ mark, are not possible.


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
A B C D E F G H I J K L M N O P
(15/17)
8V
UNSW5V
UNREG_SUB_12V
IC1005
3.6V REG
IC1004
INITIAL RESET, BACKUP VCC
IC1006
VOLTAGE DETECT
@071
(14/17)
XFRONT_RST
BATT_IN
XCS_DD1
@070
(17/17)
CTL_2
(14/17)
VOUT
CL1001
CL1002
CL1003
(14/17)
EVER_3V
BT1001
(LITHIUM BATTERY)
@064
(14/17)
(17/17)
FR_EVER_SCK
FR_EVER_SO
L1026
10uH
IC1001
DC CONTROL
IC1003
LANC DRIVER
@063
(14/17)
XLANC_ON
LANC_IN
LANC_OUT
LANC_DC
LANC_SIG
XLANC_PWR_ON
(17/17)
D_2.8V_2
05
VTR_UNREG (10/17)
REG_GND
IC_5402_13.5V (10/17)
A_1.5V (1/17)
D_1.5V (1/17) (2/17) (4/17) (5/17) (7/17) (11/17)
A_1.2V_1
D_1.2V_1 (5/17)
D_1.8V (3/17) (4/17) (7/17) (13/17)
D_2.8V_1 (1/17) (2/17) (3/17) (4/17) (5/17) (7/17) (8/17) (11/17) (17/17)
PVCC_1 (17/17)
EP_4.6V (6/17)
RP_4.6V (10/17)
A_4.6V (6/17) (8/17)
AU_4.6V (9/17)
IC1002
3.1V REG
C1087
2.2u
D_3.1V (12/17)
RP_6.0V (10/17)
D_1.0V (4/17)
D_3.3V (7/17)

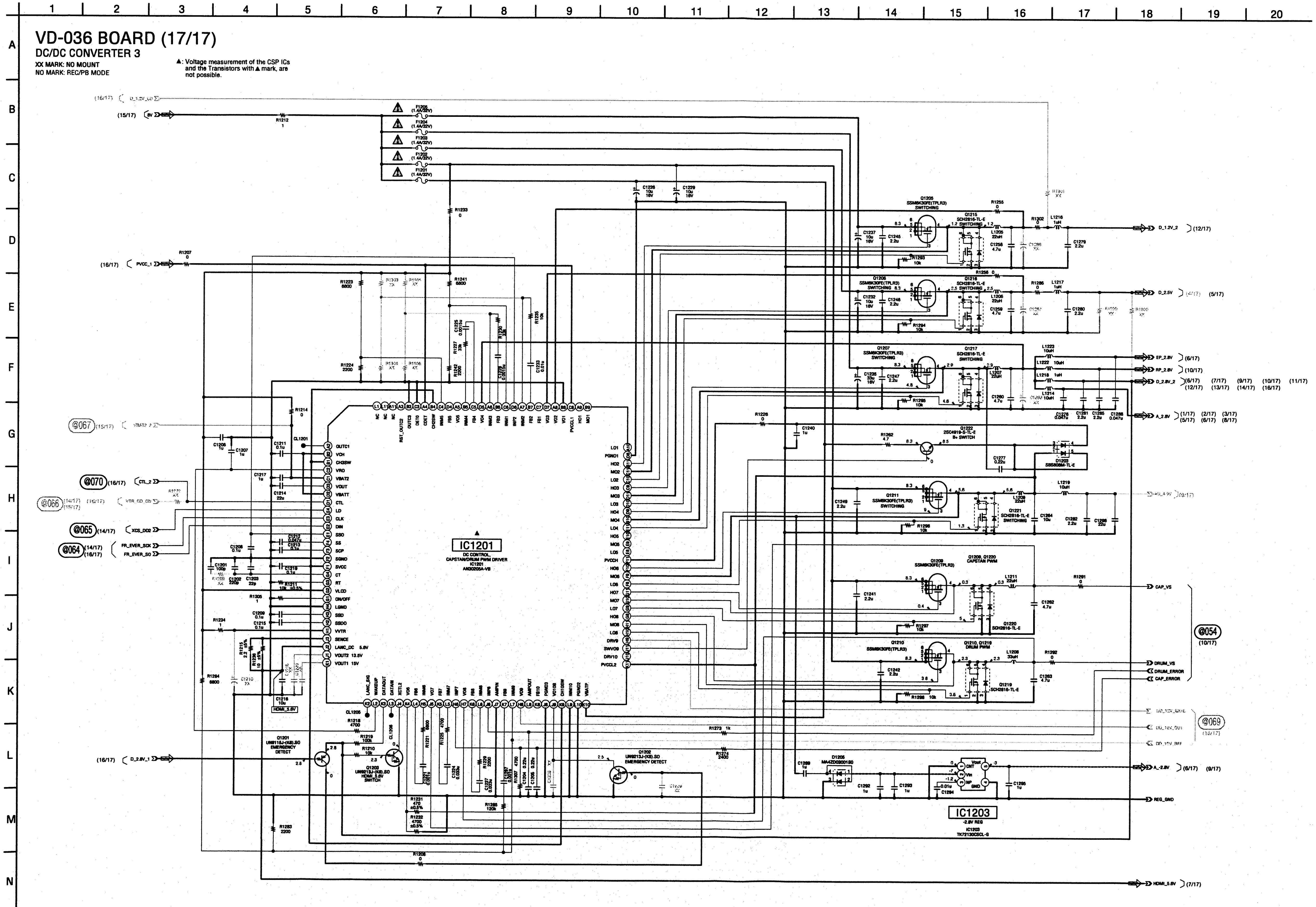
• Refer to page 4-3 (English), 4-4 (Japanese) for mark ⚠.

VD-036 BOARD (17/17)

DC/DC CONVERTER 3

XX MARK: NO MOUNT
NO MARK: REC/PB MODE

▲: Voltage measurement of the CSP ICs and the Transistors with ▲ mark, are not possible.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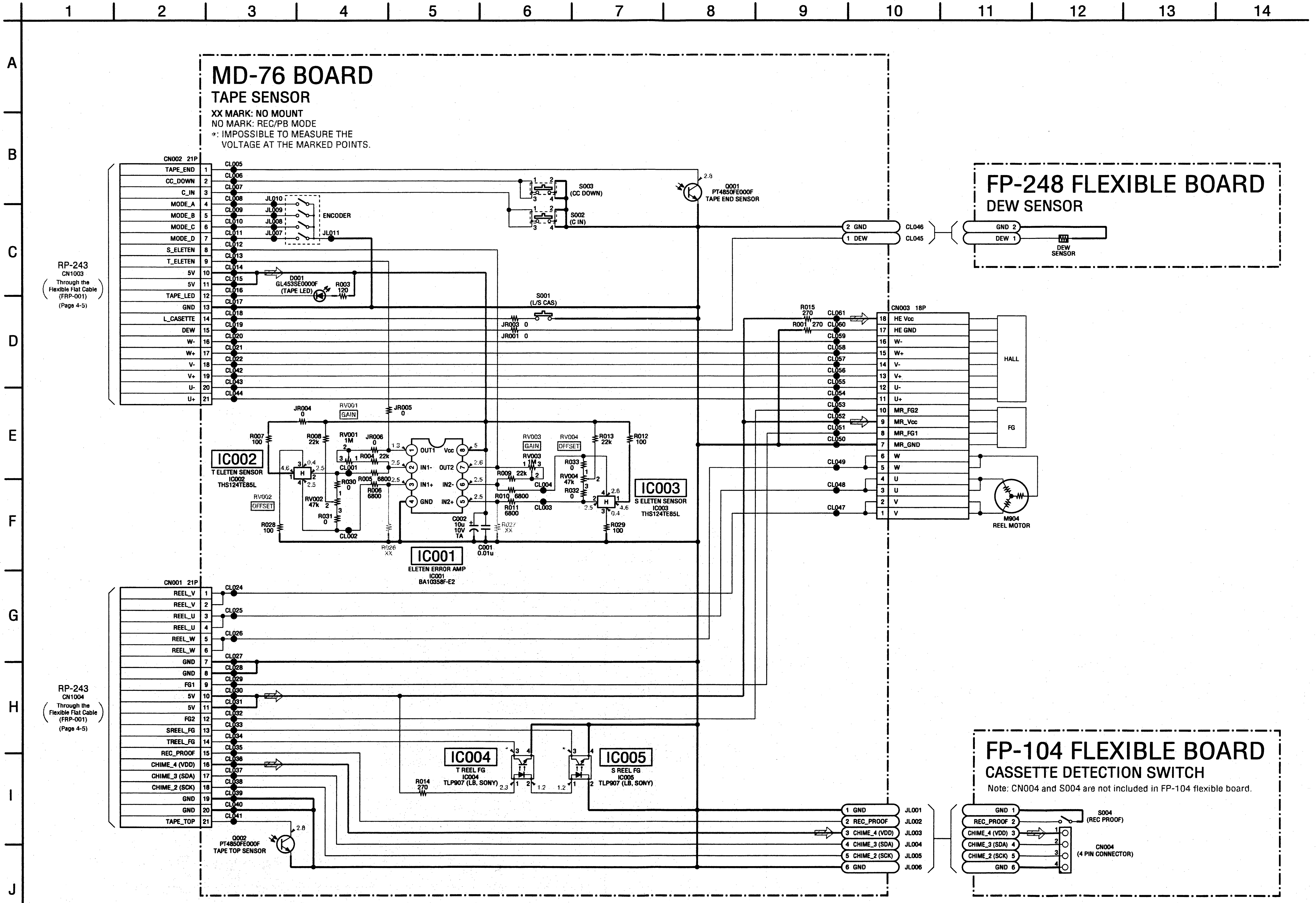
K
L
M
N
IC1201
DC CONTROL, CAPSTAN/DRUM PWM DRIVER
IC1201
AN30205A-VB
IC1203
-2.8V REG
IC1203
TK72130CSCL-G
F1205 (1.4A/32V)
F1204 (1.4A/32V)
F1203 (1.4A/32V)
F1202 (1.4A/32V)
F1201 (1.4A/32V)
Q1205 SSM6K30FE(TPLR3) SWITCHING
Q1215 SCH2816-TL-E SWITCHING
Q1206 SSM6K30FE(TPLR3) SWITCHING
Q1216 SCH2816-TL-E SWITCHING
Q1207 SSM6K30FE(TPLR3) SWITCHING
Q1217 SCH2816-TL-E SWITCHING
Q1222 2SC4919-S-TL-E B+ SWITCH
D1203 SBS808M-TL-E
Q1211 SSM6K30FE(TPLR3) SWITCHING
Q1221 SCH2816-TL-E SWITCHING
Q1209 SSM6K30FE(TPLR3)
Q1209, Q1220 CAPSTAN PWM
Q1220 SCH2816-TL-E
Q1210 SSM6K30FE(TPLR3)
Q1210, Q1219 DRUM PWM
Q1219 SCH2816-TL-E
Q1201 UN9215J-(K8).SO EMERGENCY DETECT
Q1203 UN9215J-(K8).SO HDMI_5.8V SWITCH
Q1202 UN9213J-(K8).SO EMERGENCY DETECT
D1205 MA4ZD03001S0
8V
PVCC_1
D_2.8V_1
CTL_2
VTR_GD_GB
XCS_DD2
FR_EVER_SCK
FR_EVER_SO
VBAT2_2
D_1.2V_2
D_2.5V
EP_2.8V
RP_2.8V
D_2.8V_2
A_2.8V
CAP_VS
DRUM_VS
DRUM_ERROR
CAP_ERROR
A_-2.8V
REG_GND
HDMI_5.8V
(15/17)
(16/17)
(12/17)
(5/17)
(6/17)
(10/17)
@067
@070
@066
@065
@064
@054
@069

05

HVR-M25J/M25U/M25N/M25E/M25P/M25C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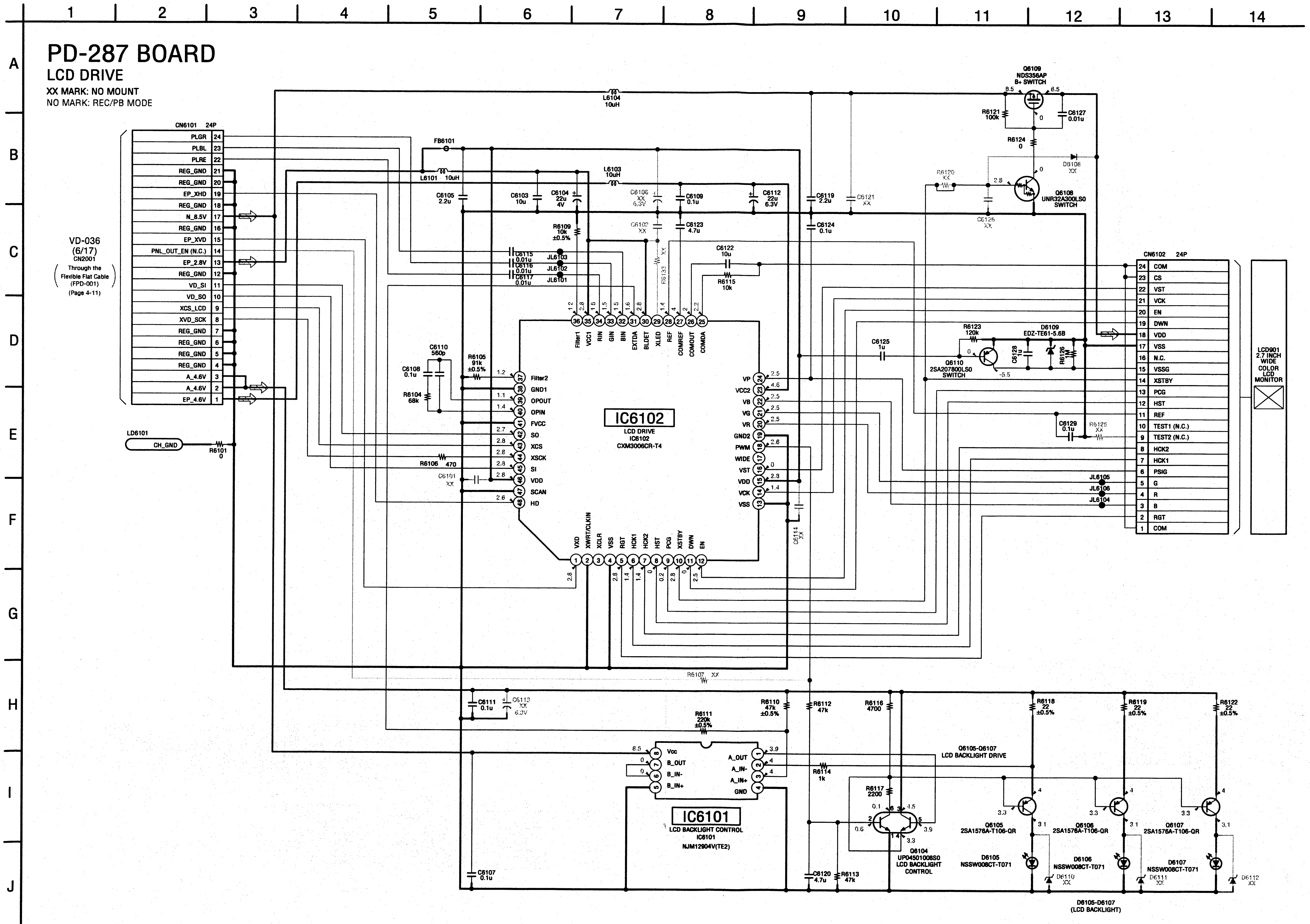
J
MD-76 BOARD
TAPE SENSOR
XX MARK: NO MOUNT
NO MARK: REC/PB MODE
*: IMPOSSIBLE TO MEASURE THE VOLTAGE AT THE MARKED POINTS.
CN002 21P
TAPE_END
CC_DOWN
C_IN
MODE_A
MODE_B
MODE_C
MODE_D
S_ELETEN
T_ELETEN
5V
5V
TAPE_LED
GND
L_CASETTE
DEW
W-
W+
V-
V+
U-
U+
RP-243
CN1003
Through the Flexible Flat Cable (FRP-001)
(Page 4-5)
ENCODER
JL010
JL009
JL008
JL007
JL011
D001
GL453SE0000F
(TAPE LED)
R003
120
S003
(CC DOWN)
S002
(C IN)
Q001
PT4850FE000F
TAPE END SENSOR
S001
(L/S CAS)
JR003 0
JR001 0
FP-248 FLEXIBLE BOARD
DEW SENSOR
2 GND
1 DEW
CL046
CL045
GND 2
DEW 1
DEW SENSOR
R015
270
R001 270
CN003 18P
HE Vcc
HE GND
W-
W+
V-
V+
U-
U+
MR_FG2
MR_Vcc
MR_FG1
MR_GND
W
W
U
U
V
V
HALL
FG
M904
REEL MOTOR
IC002
T ELETEN SENSOR
IC002
THS124TE85L
IC001
ELETEN ERROR AMP
IC001
BA10358F-E2
IC003
S ELETEN SENSOR
IC003
THS124TE85L
RV001
GAIN
RV002
OFFSET
RV003
GAIN
RV004
OFFSET
JR004 0
JR005 0
JR006 0
R007 100
R008 22k
RV001 1M
R004 22k
R005 6800
R006 6800
R030 0
RV002 47k
R031 0
R028 100
R026 XX
R027 XX
C002 10u 10V TA
C001 0.01u
R009 22k
R010 6800
R011 6800
R013 22k
R012 100
R033 0
RV004 47k
R032 0
R029 100
OUT1
Vcc
IN1-
OUT2
IN1+
IN2-
GND
IN2+
CN001 21P
REEL_V
REEL_V
REEL_U
REEL_U
REEL_W
REEL_W
GND
GND
FG1
5V
5V
FG2
SREEL_FG
TREEL_FG
REC_PROOF
CHIME_4 (VDD)
CHIME_3 (SDA)
CHIME_2 (SCK)
GND
GND
TAPE_TOP
RP-243
CN1004
Through the Flexible Flat Cable (FRP-001)
(Page 4-5)
IC004
T REEL FG
IC004
TLP907 (LB, SONY)
IC005
S REEL FG
IC005
TLP907 (LB, SONY)
R014
270
Q002
PT4850FE000F
TAPE TOP SENSOR
1 GND
2 REC_PROOF
3 CHIME_4 (VDD)
4 CHIME_3 (SDA)
5 CHIME_2 (SCK)
6 GND
JL001
JL002
JL003
JL004
JL005
JL006
FP-104 FLEXIBLE BOARD
CASSETTE DETECTION SWITCH
Note: CN004 and S004 are not included in FP-104 flexible board.
GND 1
REC_PROOF 2
CHIME_4 (VDD) 3
CHIME_3 (SDA) 4
CHIME_2 (SCK) 5
GND 6
S004
(REC PROOF)
CN004
(4 PIN CONNECTOR)
05

PD-287 BOARD

LCD DRIVE

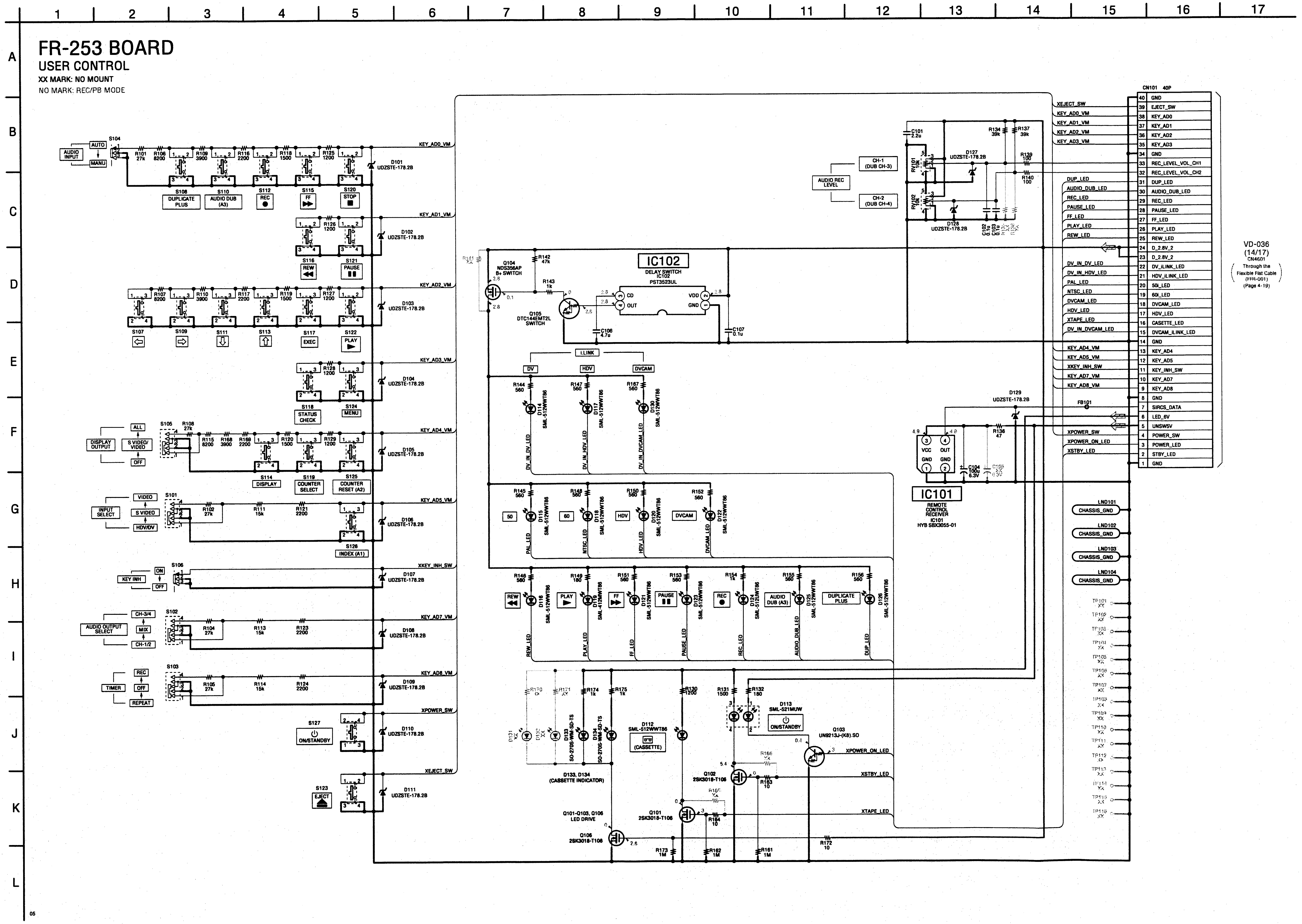
XX MARK: NO MOUNT
NO MARK: REC/PB MODE


1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H I J
VD-036
(6/17)
CN2001
Through the Flexible Flat Cable (FPD-001)
(Page 4-11)
CN6101 24P
PLGR 24
PLBL 23
PLRE 22
REG_GND 21
REG_GND 20
EP_XHD 19
REG_GND 18
N_8.5V 17
REG_GND 16
EP_XVD 15
PNL_OUT_EN (N.C.) 14
EP_2.8V 13
REG_GND 12
VD_SI 11
VD_SO 10
XCS_LCD 9
XVD_SCK 8
REG_GND 7
REG_GND 6
REG_GND 5
REG_GND 4
A_4.6V 3
A_4.6V 2
EP_4.6V 1
LD6101
CH_GND
R6101 0
FB6101
L6101 10uH
L6104 10uH
L6103 10uH
C6105 2.2u
C6103 10u
C6104 22u 4V
C6106 XX 6.3V
C6109 0.1u
C6112 22u 6.3V
C6102 XX
C6123 4.7u
R6109 10k ±0.5%
R6133 XX
C6115 0.01u
C6116 0.01u
C6117 0.01u
JL6103
JL6102
JL6101
C6122 10u
R6115 10k
C6119 2.2u
C6121 XX
C6124 0.1u
C6110 560p
C6108 0.1u
R6105 91k ±0.5%
R6104 68k
R6106 470
C6101 XX
IC6102
LCD DRIVE
IC6102
CXM3006CR-T4
Filter1 VCC1 RIN GIN BIN EXTDA BLDET XLED REF COMREF COMOUT COMDA
Filter2 GND1 OPOUT OPIN FVCC SO XCS XSCK SI VDD SCAN HD
VP VCC2 VB VG VR GND2 PWM WIDE VST VDD VCK VSS
VXD XWRT/CLKIN XCLR VSS RGT HCK1 HCK2 HST PCG XSTBY DWN EN
C6114 XX
Q6109 NDS356AP B+ SWITCH
R6121 100k
C6127 0.01u
R6124 0
D6108 XX
R6120 XX
C6126 XX
Q6108 UNR32A300LS0 SWITCH
C6125 1u
R6123 120k
D6109 EDZ-TE61-5.6B
C6128 1u
R6126 1M
Q6110 2SA2078OOLS0 SWITCH
C6129 0.1u
R6125 XX
JL6105
JL6106
JL6104
CN6102 24P
24 COM
23 CS
22 VST
21 VCK
20 EN
19 DWN
18 VDD
17 VSS
16 N.C.
15 VSSG
14 XSTBY
13 PCG
12 HST
11 REF
10 TEST1 (N.C.)
9 TEST2 (N.C.)
8 HCK2
7 HCK1
6 PSIG
5 G
4 R
3 B
2 RGT
1 COM
LCD901 2.7 INCH WIDE COLOR LCD MONITOR
R6107 XX
C6111 0.1u
C6113 XX 6.3V
R6111 220k ±0.5%
R6110 47k ±0.5%
R6112 47k
R6116 4700
R6114 1k
R6117 2200
Vcc B_OUT B_IN- B_IN+ A_OUT A_IN- A_IN+ GND
IC6101
LCD BACKLIGHT CONTROL
IC6101
NJM12904V(TE2)
Q6104 UP04501008S0 LCD BACKLIGHT CONTROL
C6107 0.1u
C6120 4.7u
R6113 47k
R6118 22 ±0.5%
R6119 22 ±0.5%
R6122 22 ±0.5%
Q6105-Q6107 LCD BACKLIGHT DRIVE
Q6105 2SA1576A-T106-QR
Q6106 2SA1576A-T106-QR
Q6107 2SA1576A-T106-QR
D6105 NSSW008CT-T071
D6106 NSSW008CT-T071
D6107 NSSW008CT-T071
D6110 XX
D6111 XX
D6112 XX
D6105-D6107 (LCD BACKLIGHT)
05

FR-253 BOARD

USER CONTROL

XX MARK: NO MOUNT
NO MARK: REC/PB MODE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17
A
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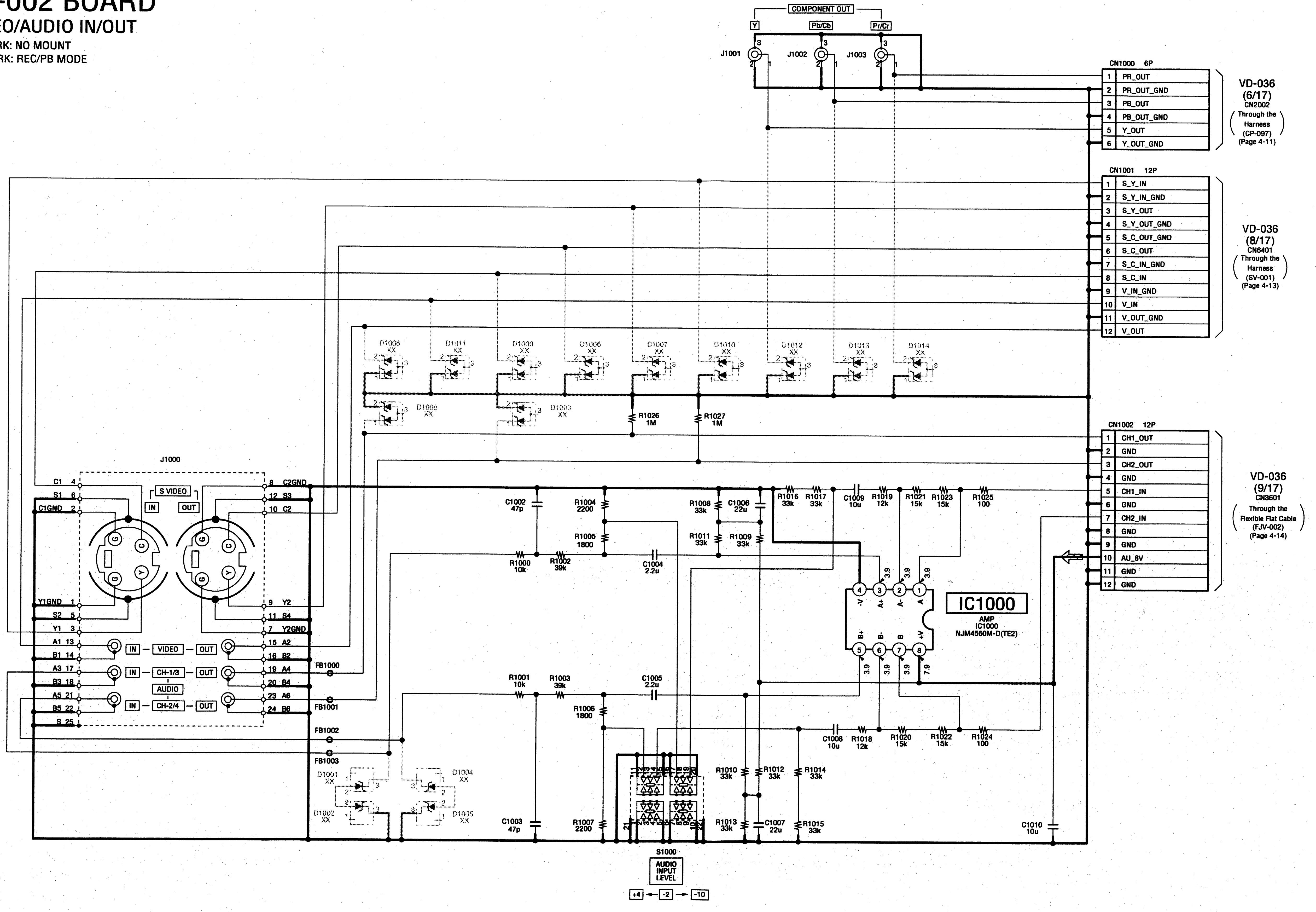
C
D
E
F
G
H
I
J
K
L
AUDIO INPUT
AUTO
MANU
S104
R101 27k
R106 8200
R109 3900
R116 2200
R118 1500
R125 1200
S108 DUPLICATE PLUS
S110 AUDIO DUB (A3)
S112 REC ●
S115 FF ▶▶
S120 STOP ■
KEY_AD0_VM
D101 UDZSTE-178.2B
R126 1200
S116 REW ◀◀
S121 PAUSE ▮▮
KEY_AD1_VM
D102 UDZSTE-178.2B
R107 8200
R110 3900
R117 2200
R119 1500
R127 1200
S107 ⇦
S109 ⇨
S111 ⇩
S113 ⇧
S117 EXEC
S122 PLAY ▶
KEY_AD2_VM
D103 UDZSTE-178.2B
R128 1200
S118 STATUS CHECK
S124 MENU
KEY_AD3_VM
D104 UDZSTE-178.2B
DISPLAY OUTPUT
ALL
S VIDEO/ VIDEO
OFF
S105
R108 27k
R115 8200
R168 3900
R169 2200
R120 1500
R129 1200
S114 DISPLAY
S119 COUNTER SELECT
S125 COUNTER RESET (A2)
KEY_AD4_VM
D105 UDZSTE-178.2B
INPUT SELECT
VIDEO
S VIDEO
HDV/DV
S101
R102 27k
R111 15k
R121 2200
S126 INDEX (A1)
KEY_AD5_VM
D106 UDZSTE-178.2B
KEY INH
ON
OFF
S106
XKEY_INH_SW
D107 UDZSTE-178.2B
AUDIO OUTPUT SELECT
CH-3/4
MIX
CH-1/2
S102
R104 27k
R113 15k
R123 2200
KEY_AD7_VM
D108 UDZSTE-178.2B
TIMER
REC
OFF
REPEAT
S103
R105 27k
R114 15k
R124 2200
KEY_AD8_VM
D109 UDZSTE-178.2B
S127 ⏻ ON/STANDBY
XPOWER_SW
D110 UDZSTE-178.2B
S123 EJECT ⏏
XEJECT_SW
D111 UDZSTE-178.2B
R141 XX
Q104 NDS356AP B+ SWITCH
R142 47k
R143 1k
Q105 DTC144EMT2L SWITCH
IC102
DELAY SWITCH IC102 PST3523UL
CD
OUT
VDD
GND
C106 4.7u
C107 0.1u
2.8
0.1
2.6
0
AUDIO REC LEVEL
CH-1 (DUB CH-3)
CH-2 (DUB CH-4)
RV101 10k
RV102 10k
C101 2.2u
D127 UDZSTE-178.2B
D128 UDZSTE-178.2B
R134 39k
R137 39k
R139 100
R140 100
C102 0.1u
C103 0.1u
i.LINK
DV
HDV
DVCAM
R144 560
R147 560
R167 560
D114 SML-512WWT86
D117 SML-512WWT86
D130 SML-512WWT86
DV_IN_DV_LED
DV_IN_HDV_LED
DV_IN_DVCAM_LED
R145 560
R148 560
R150 560
R152 560
50
60
HDV
DVCAM
D115 SML-512WWT86
D118 SML-512WWT86
D120 SML-512WWT86
D122 SML-512WWT86
PAL_LED
NTSC_LED
HDV_LED
DVCAM_LED
R146 560
R149 180
R151 560
R153 560
R154 1k
R155 560
R156 560
REW ◀◀
PLAY ▶
FF ▶▶
PAUSE ▮▮
REC ●
AUDIO DUB (A3)
DUPLICATE PLUS
D116 SML-512WWT86
D119 SML-412MWT86
D121 SML-512WWT86
D123 SML-512WWT86
D124 SML-512UWT86
D125 SML-512WWT86
D126 SML-512WWT86
REW_LED
PLAY_LED
FF_LED
PAUSE_LED
REC_LED
AUDIO_DUB_LED
DUP_LED
R170 XX
R171 XX
D131 XX
D132 XX
R174 1k
R175 1k
D133 SO-270S-WM-SD-TS
D134 SO-270S-WM-SD-TS
D133, D134 (CASSETTE INDICATOR)
D112 SML-512WWT86
(CASSETTE)
R130 1200
R131 1500
R132 180
D113 SML-521MUW
⏻ ON/STANDBY
Q103 UN9213J-(K8).SO
XPOWER_ON_LED
R166 XX
Q102 2SK3018-T106
R163 10
XSTBY_LED
R165 XX
Q101 2SK3018-T106
R164 10
XTAPE_LED
Q101-Q103, Q106 LED DRIVE
Q106 2SK3018-T106
R173 1M
R162 1M
R161 1M
R172 10
5.4
0.4
D129 UDZSTE-178.2B
R136 47
IC101
REMOTE CONTROL RECEIVER IC101 HYB SBX3055-01
VCC
OUT
GND
C104 100u 6.3V
C105 XX 6.3V
4.9
FB101
CN101 40P
40 GND
39 EJECT_SW
38 KEY_AD0
37 KEY_AD1
36 KEY_AD2
35 KEY_AD3
34 GND
33 REC_LEVEL_VOL_CH1
32 REC_LEVEL_VOL_CH2
31 DUP_LED
30 AUDIO_DUB_LED
29 REC_LED
28 PAUSE_LED
27 FF_LED
26 PLAY_LED
25 REW_LED
24 D_2.8V_2
23 D_2.8V_2
22 DV_iLINK_LED
21 HDV_iLINK_LED
20 50i_LED
19 60i_LED
18 DVCAM_LED
17 HDV_LED
16 CASETTE_LED
15 DVCAM_iLINK_LED
14 GND
13 KEY_AD4
12 KEY_AD5
11 KEY_INH_SW
10 KEY_AD7
9 KEY_AD8
8 GND
7 SIRCS_DATA
6 LED_6V
5 UNSW5V
4 POWER_SW
3 POWER_LED
2 STBY_LED
1 GND
XEJECT_SW
KEY_AD0_VM
KEY_AD1_VM
KEY_AD2_VM
KEY_AD3_VM
DUP_LED
AUDIO_DUB_LED
REC_LED
PAUSE_LED
FF_LED
PLAY_LED
REW_LED
DV_IN_DV_LED
DV_IN_HDV_LED
PAL_LED
NTSC_LED
DVCAM_LED
HDV_LED
XTAPE_LED
DV_IN_DVCAM_LED
KEY_AD4_VM
KEY_AD5_VM
XKEY_INH_SW
KEY_AD7_VM
KEY_AD8_VM
XPOWER_SW
XPOWER_ON_LED
XSTBY_LED
VD-036 (14/17) CN4601
Through the Flexible Flat Cable (FFR-001) (Page 4-19)
LND101 CHASSIS_GND
LND102 CHASSIS_GND
LND103 CHASSIS_GND
LND104 CHASSIS_GND
TP101 XX
TP102 XX
TP103 XX
TP104 XX
TP105 XX
TP106 XX
TP107 XX
TP108 XX
TP109 XX
TP110 XX
TP111 XX
TP112 XX
TP113 XX
TP114 XX
TP115 XX
TP116 XX
05

JV-002 BOARD

VIDEO/AUDIO IN/OUT

XX MARK: NO MOUNT
NO MARK: REC/PB MODE



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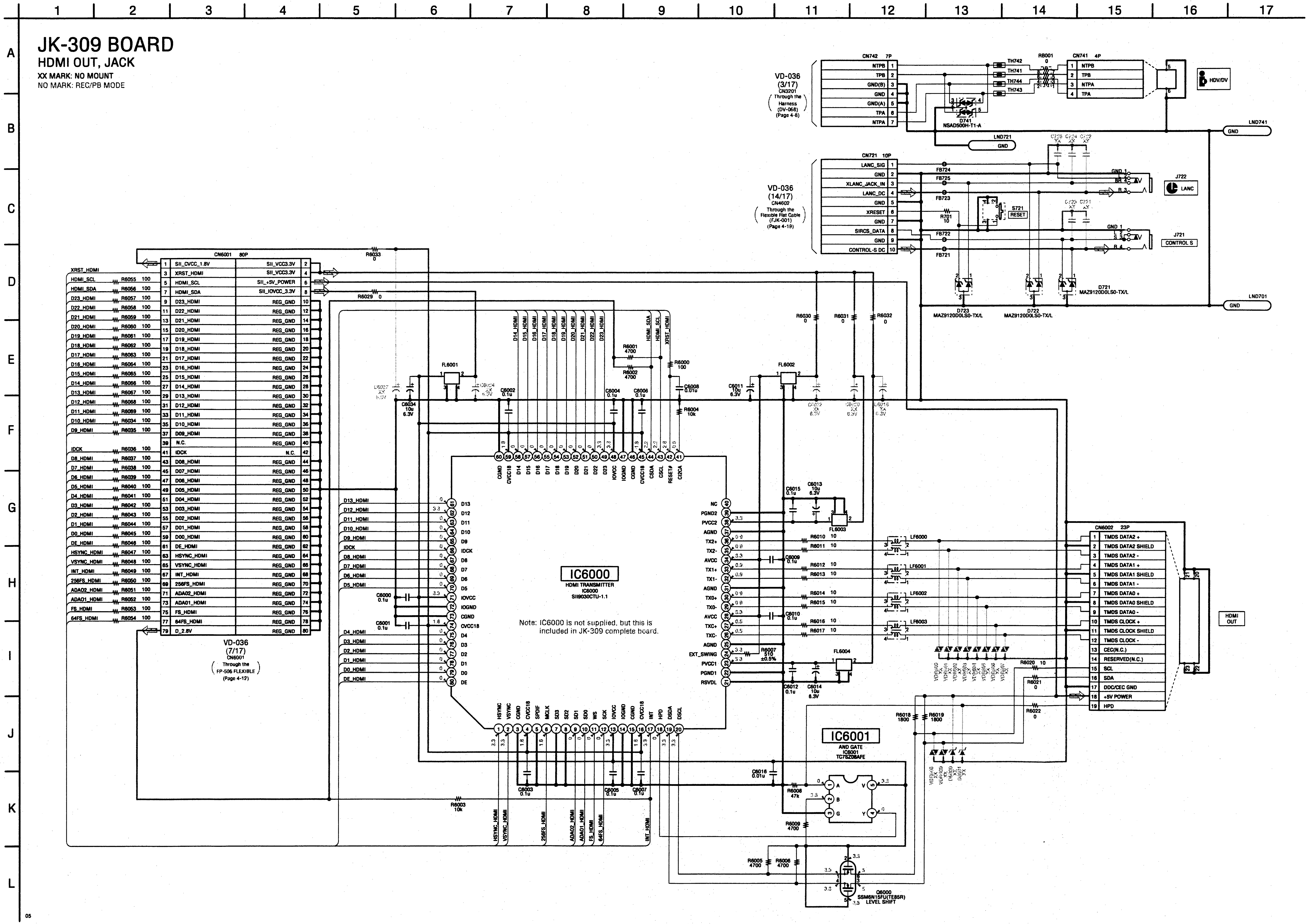
11
12
13
A
B
C
D
E
F
G
H
I
COMPONENT OUT
Y
Pb/Cb
Pr/Cr
J1001
J1002
J1003
CN1000 6P
1 PR_OUT
2 PR_OUT_GND
3 PB_OUT
4 PB_OUT_GND
5 Y_OUT
6 Y_OUT_GND
VD-036 (6/17) CN2002
Through the Harness (CP-097) (Page 4-11)
CN1001 12P
1 S_Y_IN
2 S_Y_IN_GND
3 S_Y_OUT
4 S_Y_OUT_GND
5 S_C_OUT_GND
6 S_C_OUT
7 S_C_IN_GND
8 S_C_IN
9 V_IN_GND
10 V_IN
11 V_OUT_GND
12 V_OUT
VD-036 (8/17) CN6401
Through the Harness (SV-001) (Page 4-13)
D1008 XX
D1011 XX
D1009 XX
D1006 XX
D1007 XX
D1010 XX
D1012 XX
D1013 XX
D1014 XX
D1000 XX
D1003 XX
R1026 1M
R1027 1M
CN1002 12P
1 CH1_OUT
2 GND
3 CH2_OUT
4 GND
5 CH1_IN
6 GND
7 CH2_IN
8 GND
9 GND
10 AU_8V
11 GND
12 GND
VD-036 (9/17) CN3601
Through the Flexible Flat Cable (FJV-002) (Page 4-14)
J1000
C1 4
S1 6
C1GND 2
Y1GND 1
S2 5
Y1 3
A1 13
B1 14
A3 17
B3 18
A5 21
B5 22
S 25
8 C2GND
12 S3
10 C2
9 Y2
11 S4
7 Y2GND
15 A2
16 B2
19 A4
20 B4
23 A6
24 B6
S VIDEO
IN
OUT
VIDEO
CH-1/3
AUDIO
CH-2/4
FB1000
FB1001
FB1002
FB1003
C1002 47p
R1004 2200
R1005 1800
R1000 10k
R1002 39k
C1004 2.2u
R1008 33k
C1006 22u
R1011 33k
R1009 33k
R1016 33k
R1017 33k
C1009 10u
R1019 12k
R1021 15k
R1023 15k
R1025 100
3.9
IC1000
AMP IC1000 NJM4560M-D(TE2)
-V
A+
A-
A
B+
B-
B
+V
7.9
R1001 10k
R1003 39k
C1005 2.2u
R1006 1800
C1008 10u
R1018 12k
R1020 15k
R1022 15k
R1024 100
D1001 XX
D1002 XX
D1004 XX
D1005 XX
R1010 33k
R1012 33k
R1014 33k
R1013 33k
C1007 22u
R1015 33k
C1003 47p
R1007 2200
C1010 10u
S1000
AUDIO INPUT LEVEL
+4
-2
-10

05

JK-309 BOARD

HDMI OUT, JACK

XX MARK: NO MOUNT
NO MARK: REC/PB MODE

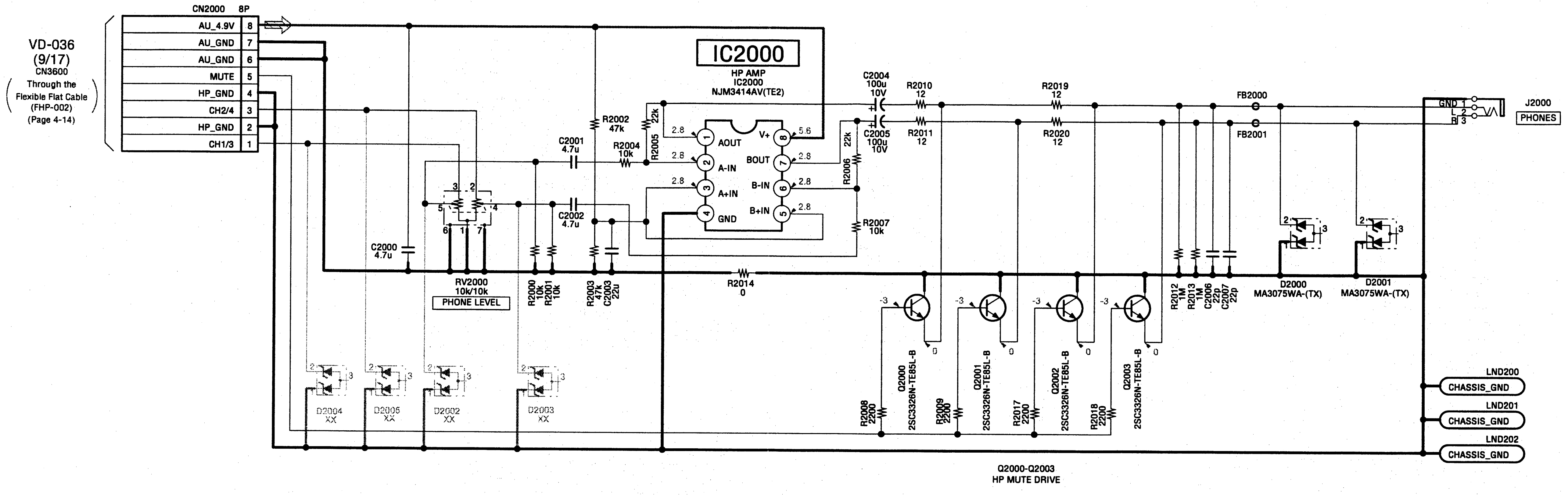

IC6000
HDMI TRANSMITTER
IC6000
SII9030CTU-1.1
IC6001
AND GATE
IC6001
TC7SZ08AFE
Q6000
SSM6N15FU(TE85R)
LEVEL SHIFT
CN6001 80P
CN6002 23P
CN742 7P
CN741 4P
CN721 10P
VD-036
(7/17)
CN6001
Through the
FP-506 FLEXIBLE
(Page 4-12)
VD-036
(3/17)
CN3201
Through the
Harness
(DV-068)
(Page 4-6)
VD-036
(14/17)
CN4602
Through the
Flexible Flat Cable
(FJK-001)
(Page 4-19)
HDV/DV
J722
LANC
J721
CONTROL S
S721
RESET
HDMI OUT
D741
NSAD500H-T1-A
D721
MAZ9120D0LS0-TX/L
D722
MAZ9120D0LS0-TX/L
D723
MAZ9120D0LS0-TX/L
LND741
LND721
LND701
GND
FL6001
FL6002
FL6003
FL6004
LF6000
LF6001
LF6002
LF6003
TMDS DATA2 +
TMDS DATA2 SHIELD
TMDS DATA2 -
TMDS DATA1 +
TMDS DATA1 SHIELD
TMDS DATA1 -
TMDS DATA0 +
TMDS DATA0 SHIELD
TMDS DATA0 -
TMDS CLOCK +
TMDS CLOCK SHIELD
TMDS CLOCK -
CEC(N.C.)
RESERVED(N.C.)
SCL
SDA
DDC/CEC GND
+5V POWER
HPD

Note: IC6000 is not supplied, but this is included in JK-309 complete board.

HP-141 BOARD

HEADPHONE

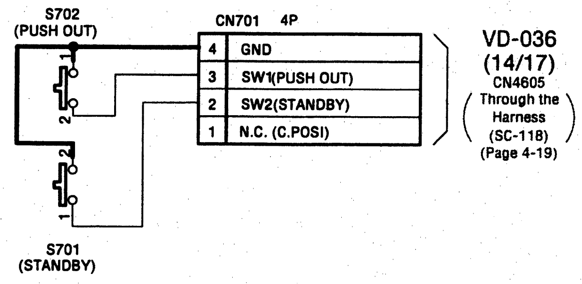
XX MARK: NO MOUNT
NO MARK: REC/PB MODE


VD-036
(9/17)
CN3600
Through the Flexible Flat Cable (FHP-002)
(Page 4-14)
CN2000 8P
AU_4.9V 8
AU_GND 7
AU_GND 6
MUTE 5
HP_GND 4
CH2/4 3
HP_GND 2
CH1/3 1
IC2000
HP AMP
IC2000
NJM3414AV(TE2)
AOUT
A-IN
A+IN
GND
V+
BOUT
B-IN
B+IN
2.8
5.6
C2000 4.7u
C2001 4.7u
C2002 4.7u
C2003 22u
C2004 100u 10V
C2005 100u 10V
C2006 22p
C2007 22p
R2000 10k
R2001 10k
R2002 47k
R2003 47k
R2004 10k
R2005 22k
R2006 22k
R2007 10k
R2008 2200
R2009 2200
R2010 12
R2011 12
R2012 1M
R2013 1M
R2014 0
R2017 2200
R2018 2200
R2019 12
R2020 12
RV2000 10k/10k
PHONE LEVEL
FB2000
FB2001
J2000
PHONES
GND 1
L 2
R 3
D2000 MA3075WA-(TX)
D2001 MA3075WA-(TX)
D2002 XX
D2003 XX
D2004 XX
D2005 XX
Q2000 2SC3326N-TE85L-B
Q2001 2SC3326N-TE85L-B
Q2002 2SC3326N-TE85L-B
Q2003 2SC3326N-TE85L-B
-3
0
LND200 CHASSIS_GND
LND201 CHASSIS_GND
LND202 CHASSIS_GND

Q2000-Q2003
HP MUTE DRIVE

SH-023 BOARD

EJECTION DETECT SWITCH


S702
(PUSH OUT)
S701
(STANDBY)
CN701 4P
4 GND
3 SW1(PUSH OUT)
2 SW2(STANDBY)
1 N.C. (C.POSI)
VD-036
(14/17)
CN4605
Through the Harness (SC-118)
(Page 4-19)

4-3. PRINTED WIRING BOARDS

Link

RP-243 BOARD
VD-036 BOARD (SIDE A)
VD-036 BOARD (SIDE B)
MD-76 BOARD
FP-248 FLEXIBLE BOARD
FP-104 FLEXIBLE BOARD
PD-287 BOARD (SIDE A)
PD-287 BOARD (SIDE B)
FR-253 BOARD (SIDE A)
FR-253 BOARD (SIDE B)
JV-002 BOARD (SIDE A)
JV-002 BOARD (SIDE B)
JK-309 BOARD
HP-141 BOARD
SH-023 BOARD
ACS1581-MA BOARD

COMMON NOTE FOR PRINTED WIRING BOARDS
MOUNTED PARTS LOCATION

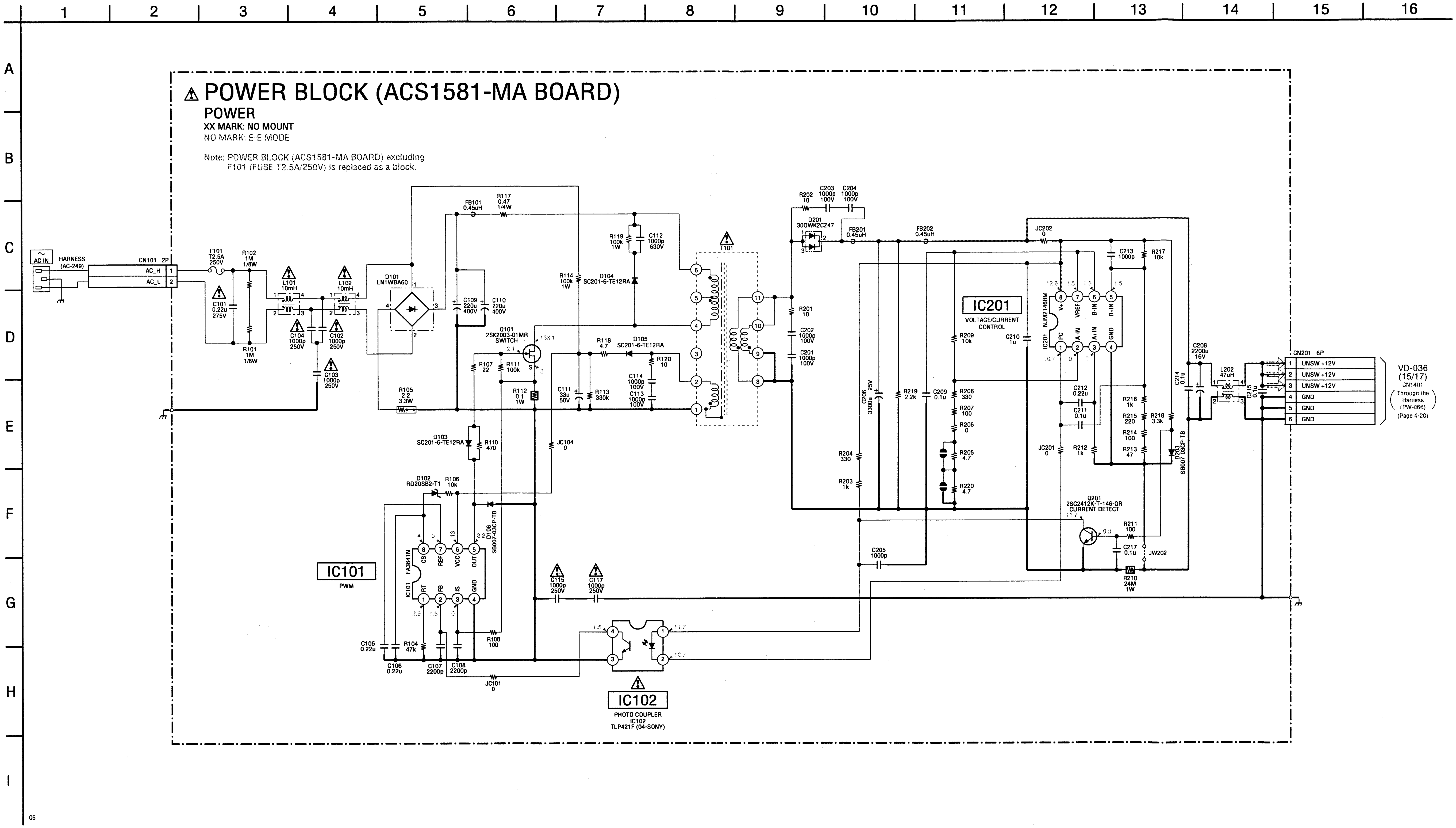
• Refer to page 4-3 (English), 4-4 (Japanese) for mark ⚠.

⚠ POWER BLOCK (ACS1581-MA BOARD)

POWER

XX MARK: NO MOUNT
NO MARK: E-E MODE

Note: POWER BLOCK (ACS1581-MA BOARD) excluding
F101 (FUSE T2.5A/250V) is replaced as a block.



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
AC IN
HARNESS (AC-249)
CN101 2P
AC_H
AC_L
F101 T2.5A 250V
R102 1M 1/8W
C101 0.22u 275V
R101 1M 1/8W
L101 10mH
L102 10mH
C104 1000p 250V
C102 1000p 250V
C103 1000p 250V
D101 LN1WBA60
FB101 0.45uH
R117 0.47 1/4W
C109 220u 400V
C110 220u 400V
R114 100k 1W
R119 100k 1W
C112 1000p 630V
D104 SC201-6-TE12RA
T101
Q101 2SK2003-01MR SWITCH
133.1
2.1
S
0
R118 4.7
D105 SC201-6-TE12RA
R120 10
R107 22
R111 100k
R105 2.2 3.3W
R112 0.1 1W
C111 33u 50V
R113 330k
C114 1000p 100V
C113 1000p 100V
D103 SC201-6-TE12RA
R110 470
JC104 0
D102 RD20SB2-T1
R106 10k
D106 SB007-03CP-TB
IC101
PWM
IC101 FA3641N
CS
REF
VCC
OUT
RT
FB
IS
GND
4
5
13
3.2
2.5
1.5
0
C105 0.22u
C106 0.22u
R104 47k
C107 2200p
C108 2200p
R108 100
JC101 0
C115 1000p 250V
C117 1000p 250V
1.5
11.7
10.7
IC102
PHOTO COUPLER
IC102
TLP421F (04-SONY)
R202 10
C203 1000p 100V
C204 1000p 100V
D201 30QWK2CZ47
FB201 0.45uH
FB202 0.45uH
R201 10
C202 1000p 100V
C201 1000p 100V
C206 3300u 25V
R204 330
R203 1k
R219 2.2k
C209 0.1u
C205 1000p
R209 10k
R208 330
R207 100
R206 0
R205 4.7
R220 4.7
IC201
VOLTAGE/CURRENT CONTROL
C210 1u
JC202 0
IC201 NJM2146BM
V+
VREF
B-IN
B+IN
PC
A-IN
A+IN
GND
12.6
1.5
1.5
1.5
10.7
0
0
C213 1000p
R217 10k
C212 0.22u
C211 0.1u
R216 1k
R215 220
R214 100
R213 47
R218 3.3k
R212 1k
JC201 0
D203 SB007-03CP-TB
Q201 2SC2412K-T-146-QR CURRENT DETECT
11.7
0.3
R211 100
C217 0.1u
JW202
R210 24M 1W
C214 0.1u
C208 2200u 16V
L202 47uH
C215 0.1u
CN201 6P
UNSW +12V
UNSW +12V
UNSW +12V
GND
GND
GND
VD-036 (15/17)
CN1401
Through the Harness (PW-066)
(Page 4-20)
05

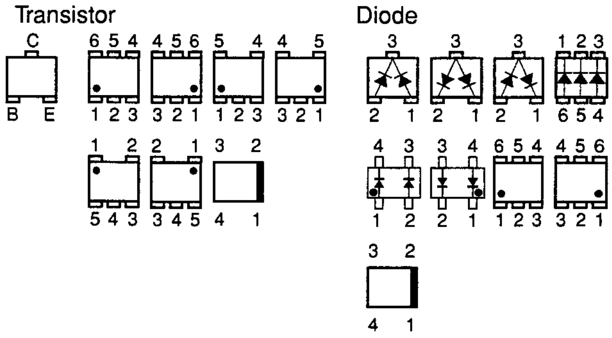
4-3. PRINTED WIRING BOARDS

(ENGLISH)

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS

- LF : Uses unleaded solder.
- ▨ : Circuit board
  ▨ : Flexible board
  Pattern from the side which enables seeing.
  ▨ : pattern of the rear side
  (The other layers' patterns are not indicated)
- Through hole is omitted.
- There are a few cases that the part printed on diagram isn't mounted in this model.
- ▭ : panel designation

- Chip parts.


Transistor
Diode
C
B E
6 5 4
1 2 3
4 5 6
3 2 1
5 4
1 2 3
4 5
3 2 1
1 2
5 4 3
2 1
3 4 5
3 2
4 1
3
2 1
3
2 1
3
2 1
1 2 3
6 5 4
4 3
1 2
3 4
2 1
6 5 4
1 2 3
4 5 6
3 2 1
3 2
4 1

(JAPANESE)

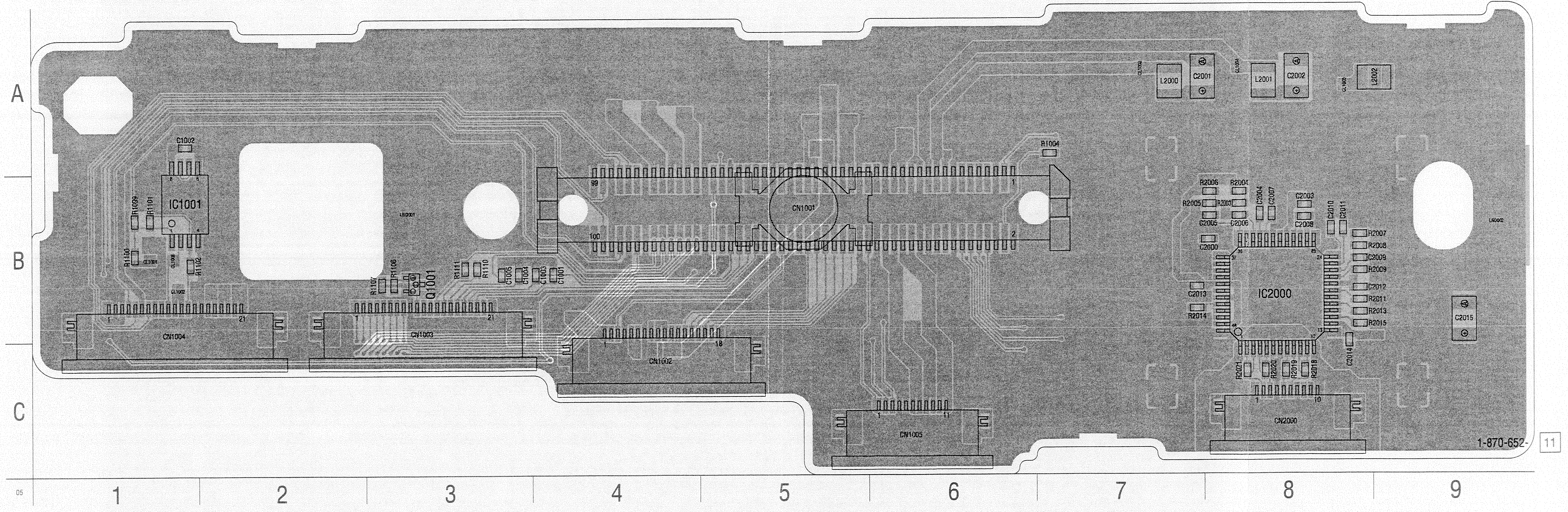
プリント図共通ノート
【プリント図ノート】

- LF：無鉛半田を使用しています。
- ▨：基板
  ▨：フレキシブル配線板
  見ている面側のパターン。
  ▨：裏側のパターン
  （他のパターンについては表示されていません）
- スルーホールは省略。
- プリント図には，本機で使用していない部品が記載されている場合があります。
- ▭はパネル表示名称。

RP-243 (4 layers)

LF : Uses unleaded solder.

RP-243 BOARD

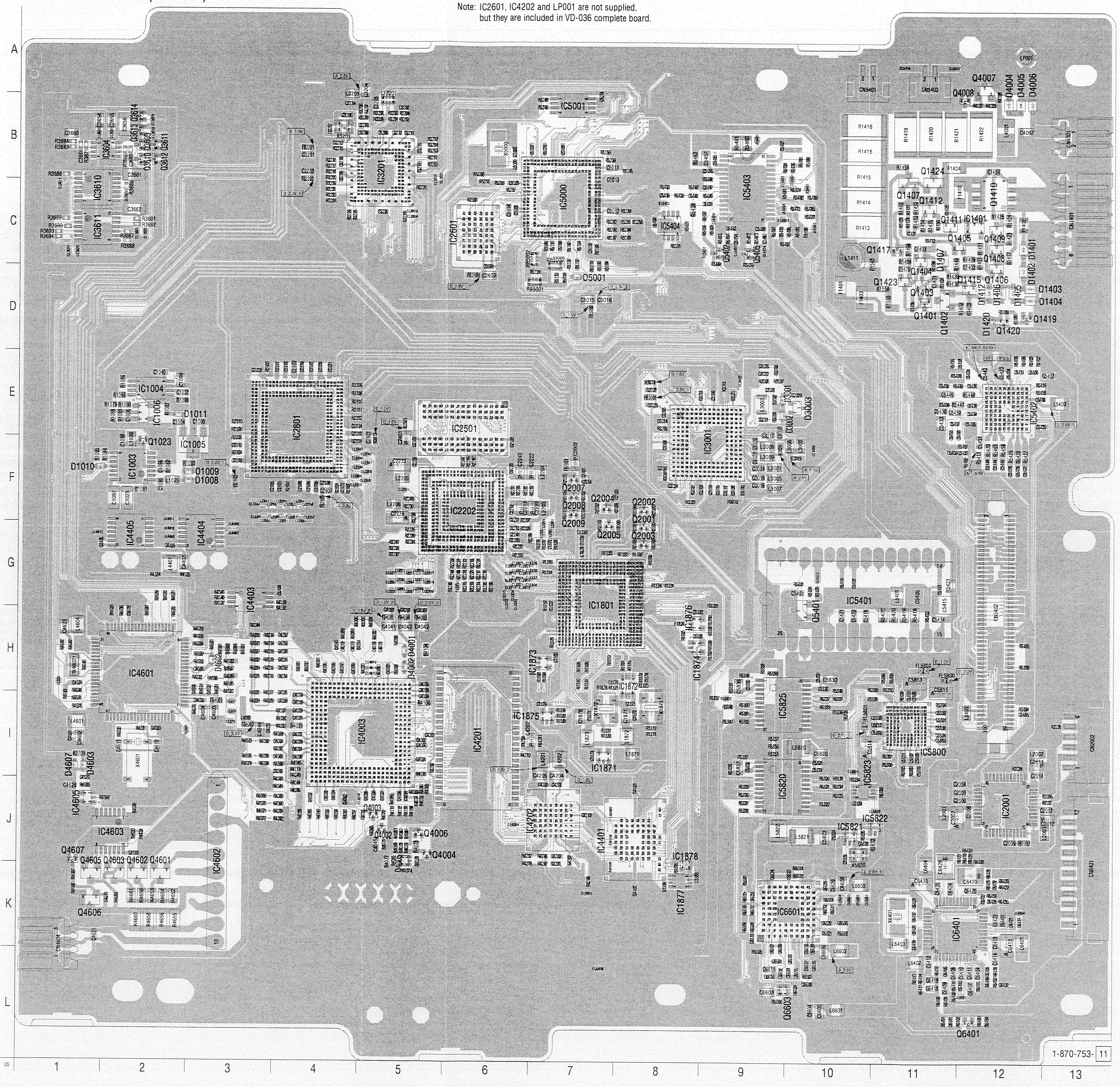

A
B
C
1
2
3
4
5
6
7
8
9
05
C1002
IC1001
R1099
R1101
R1100
R1102
CN1004
CN1003
R1107
R1106
Q1001
R1111
R1110
CN1002
CN1001
R1004
99
100
1
2
21
18
11
10
CN1005
CN2000
L2000
C2001
L2001
C2002
L2002
R2006
R2004
R2005
R2003
C2005
C2006
C2003
C2004
C2007
C2008
C2010
C2011
C2000
IC2000
C2013
R2014
R2007
R2008
C2009
R2009
C2012
R2011
R2013
R2015
C2014
R2021
R2020
R2019
R2018
C2015
1-870-652-
11

VD-036 (8 layers)

LF : Uses unleaded solder.

VD-036 BOARD (SIDE A)

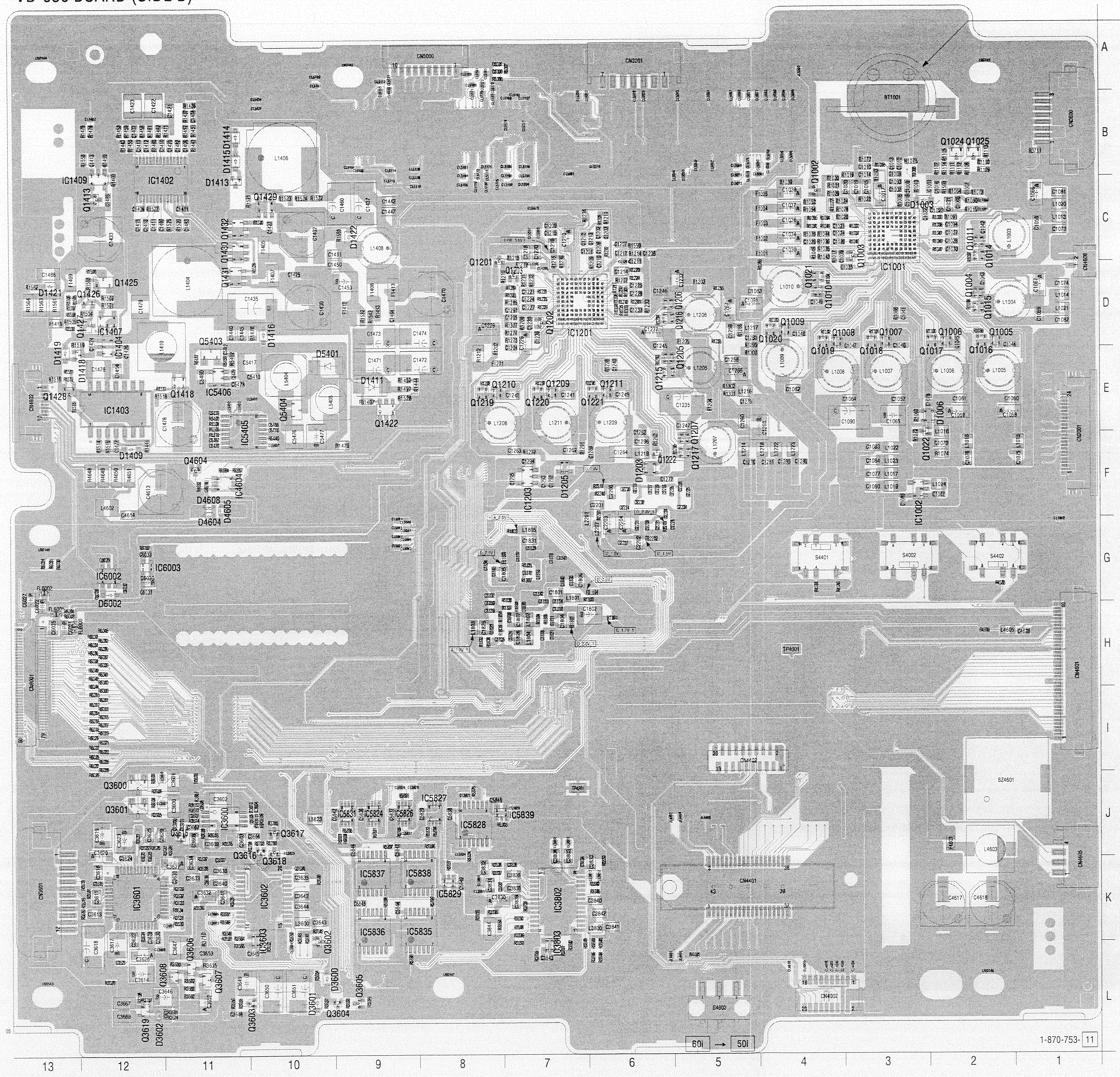
Note: IC2601, IC4202 and LP001 are not supplied,
but they are included in VD-036 complete board.


A
B
C
D
E
F
G
H
I
J
K
L
1
2
3
4
5
6
7
8
9
10
11
12
13
IC5001
IC3201
IC2601
IC5000
IC5403
IC5404
D5001
Q4007
Q4008
D4004
D4005
D4006
CN5401
CN5403
R1418
R1416
R1415
R1414
R1413
R1419
R1420
R1421
R1422
Q1424
Q1407
Q1412
Q1410
Q1411
IC1401
Q1405
Q1409
Q1408
Q1417
Q1404
Q1423
Q1415
Q1406
D1402
D1401
Q1403
Q1401
Q1402
D1420
Q1419
Q1420
D1403
D1404
IC3604
IC3610
IC3611
IC1004
IC1006
D1011
Q1023
IC1005
IC1003
D1010
D1009
D1008
IC2801
IC2501
IC3001
D3002
D3003
IC5402
IC2202
Q2007
Q2008
Q2009
Q2004
Q2002
Q2001
Q2003
Q2005
IC4405
IC4404
IC4403
IC1801
IC1876
IC5401
D5401
IC4601
IC4003
D4002
D4001
IC1873
IC1874
IC5825
IC1875
IC4201
IC1872
IC5800
IC5820
IC5823
IC1871
IC2001
D4607
D4603
IC4605
IC4603
Q4607
Q4605
Q4603
Q4602
Q4601
IC4602
Q4606
Q4003
Q4002
Q4006
Q4004
IC4202
IC4401
IC1878
IC1877
IC5821
IC5822
IC6601
Q6603
IC6401
Q6401
LP001
1-870-753-11

VD-036 (8 layers)

LF : Uses unleaded solder.

VD-036 BOARD (SIDE B)


A
B
C
D
E
F
G
H
I
J
K
L
13
12
11
10
9
8
7
6
5
4
3
2
1
IC1409
IC1402
D1413
D1414
D1415
Q1413
Q1429
L1405
L1406
Q1432
Q1430
Q1431
Q1425
D1421
Q1426
Q1427
IC1407
IC1404
D1419
D1418
Q1428
IC1403
D1409
Q1418
IC5406
Q5403
D5401
D1411
D1416
IC5405
IC5404
Q1422
Q4604
IC4604
D4608
D4605
D4604
IC6002
IC6003
D6002
Q1201
Q1203
IC1201
Q1202
Q1210
Q1209
Q1211
Q1219
Q1220
Q1221
L1208
L1211
L1209
Q1215
Q1205
Q1206
Q1204
L1206
L1205
Q1217
Q1207
L1207
Q1222
Q1208
IC1203
D1205
Q1024
Q1025
Q1002
Q1003
IC1001
Q1001
Q1010
Q1009
Q1020
L1010
Q1008
Q1007
Q1006
Q1005
Q1019
Q1018
Q1017
Q1016
L1009
L1008
L1007
L1006
L1005
Q1011
Q1014
L1003
Q1004
Q1015
L1004
Q1022
D1006
IC1002
BT1001
S4401
S4002
S4402
TP4001
CN4401
CN4402
BZ4601
L4603
C4617
C4618
Q3600
Q3601
IC3601
IC3600
Q3617
Q3616
Q3618
IC3602
IC3603
Q3606
Q3608
Q3607
Q3619
D3602
Q3603
Q3601
Q3600
Q3605
Q3604
IC5827
IC5831
IC5824
IC5826
IC5839
IC5828
IC5837
IC5838
IC5829
IC5836
IC5835
IC3802
IC3803
1-870-753- 11
60i → 50i

BT1001
(BATTERY,
LITHIUM SECONDARY)

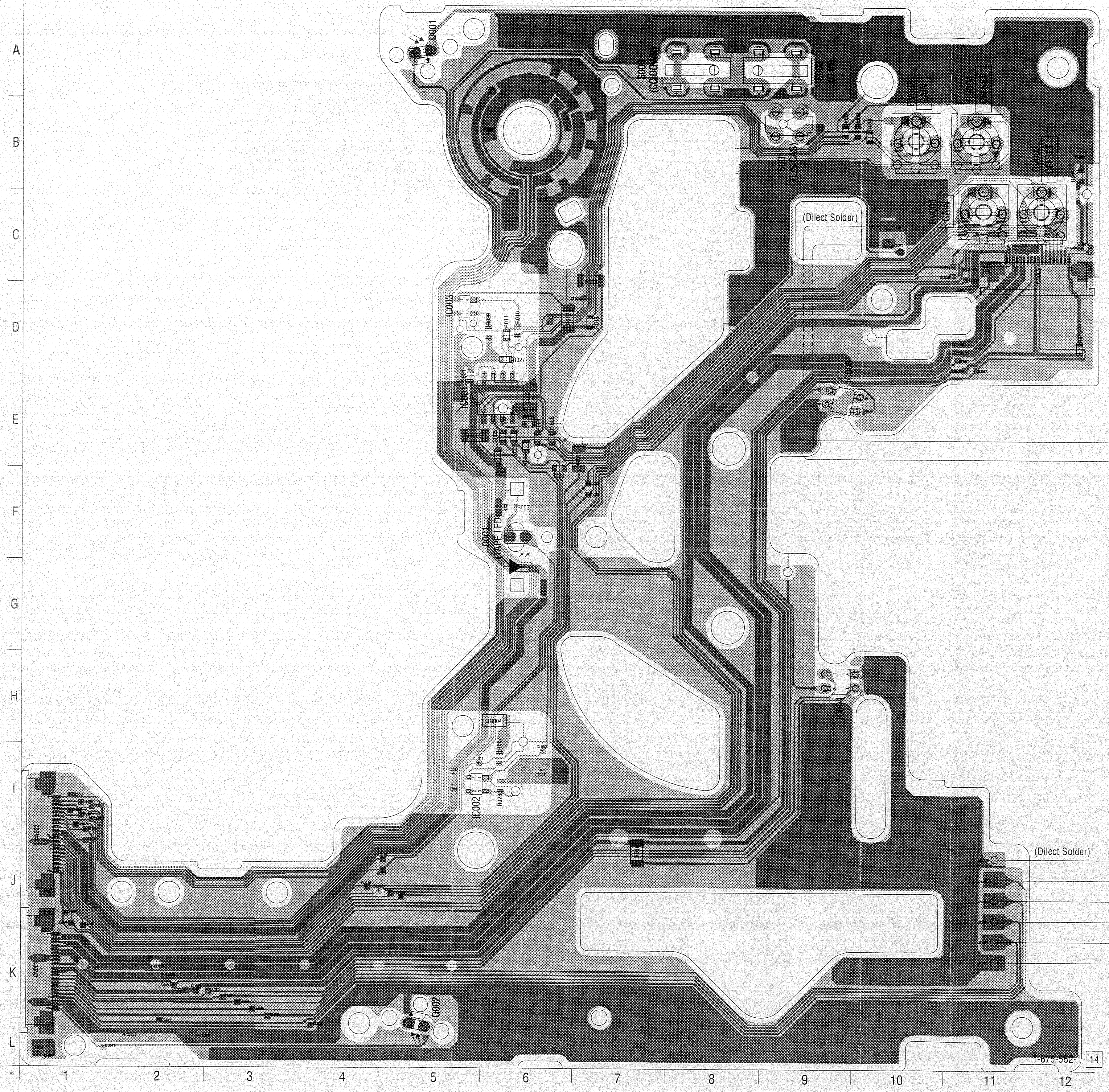
CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

注意
電池の交換は，正しく行わないと破裂する恐れがあります。電池を交換する場合には必ず同じ型名の電池又は同等品と交換してください。

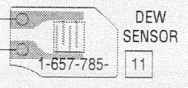
MD-76 (2 layers), FP-248 (1 layer), FP-104 (1 layer)

LF : Uses unleaded solder.

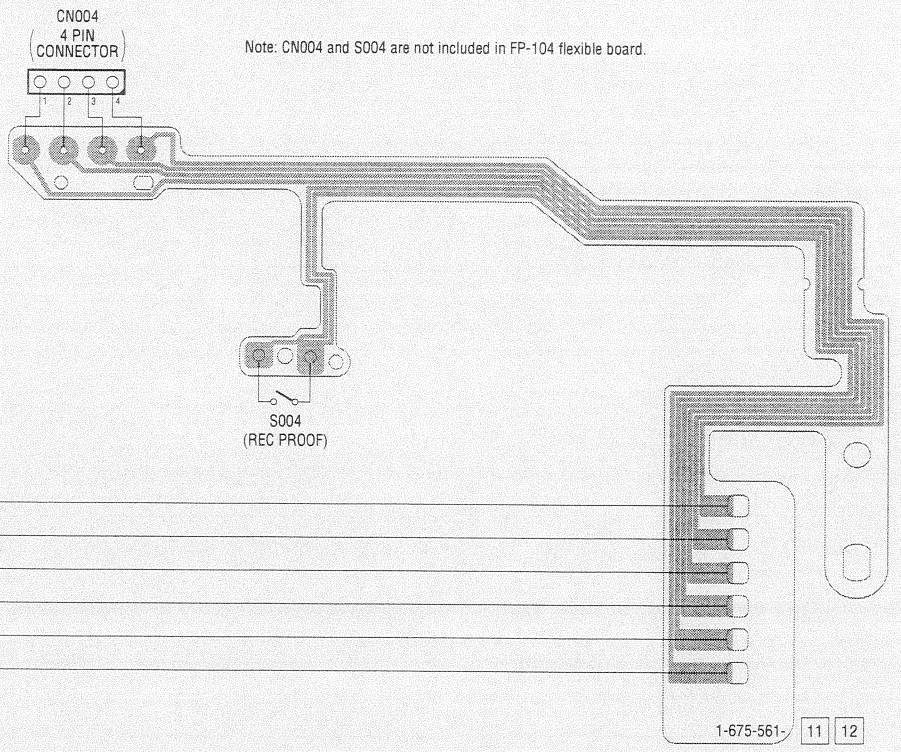
MD-76 BOARD


A
B
C
D
E
F
G
H
I
J
K
L
1
2
3
4
5
6
7
8
9
10
11
12
Q001
S003 (CC DOWN)
S002 (C IN)
S001 (LS CAS)
RV003 GAIN
RV004 OFFSET
RV002 OFFSET
RV001 GAIN
(Dilect Solder)
IC003
IC001
D001 (TAPE LED)
IC005
IC004
IC002
Q002
(Dilect Solder)
1-675-562-
14

FP-248 FLEXIBLE BOARD


DEW SENSOR
1-657-785-
11

FP-104 FLEXIBLE BOARD

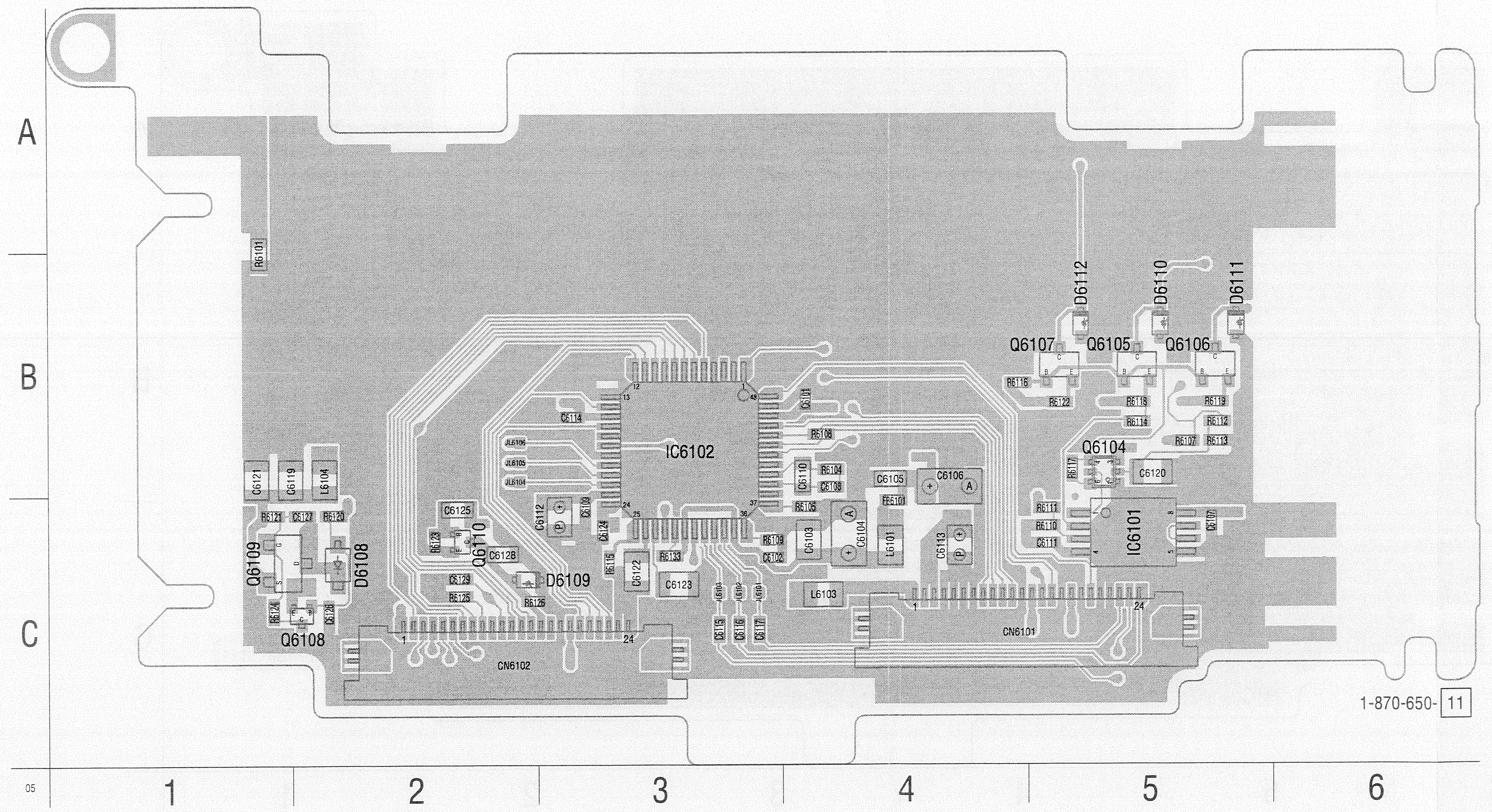

CN004
4 PIN
CONNECTOR
1
2
3
4
S004
(REC PROOF)
1-675-561-
11
12

Note: CN004 and S004 are not included in FP-104 flexible board.

PD-287 (2 layers)

LF : Uses unleaded solder.

PD-287 BOARD (SIDE A)

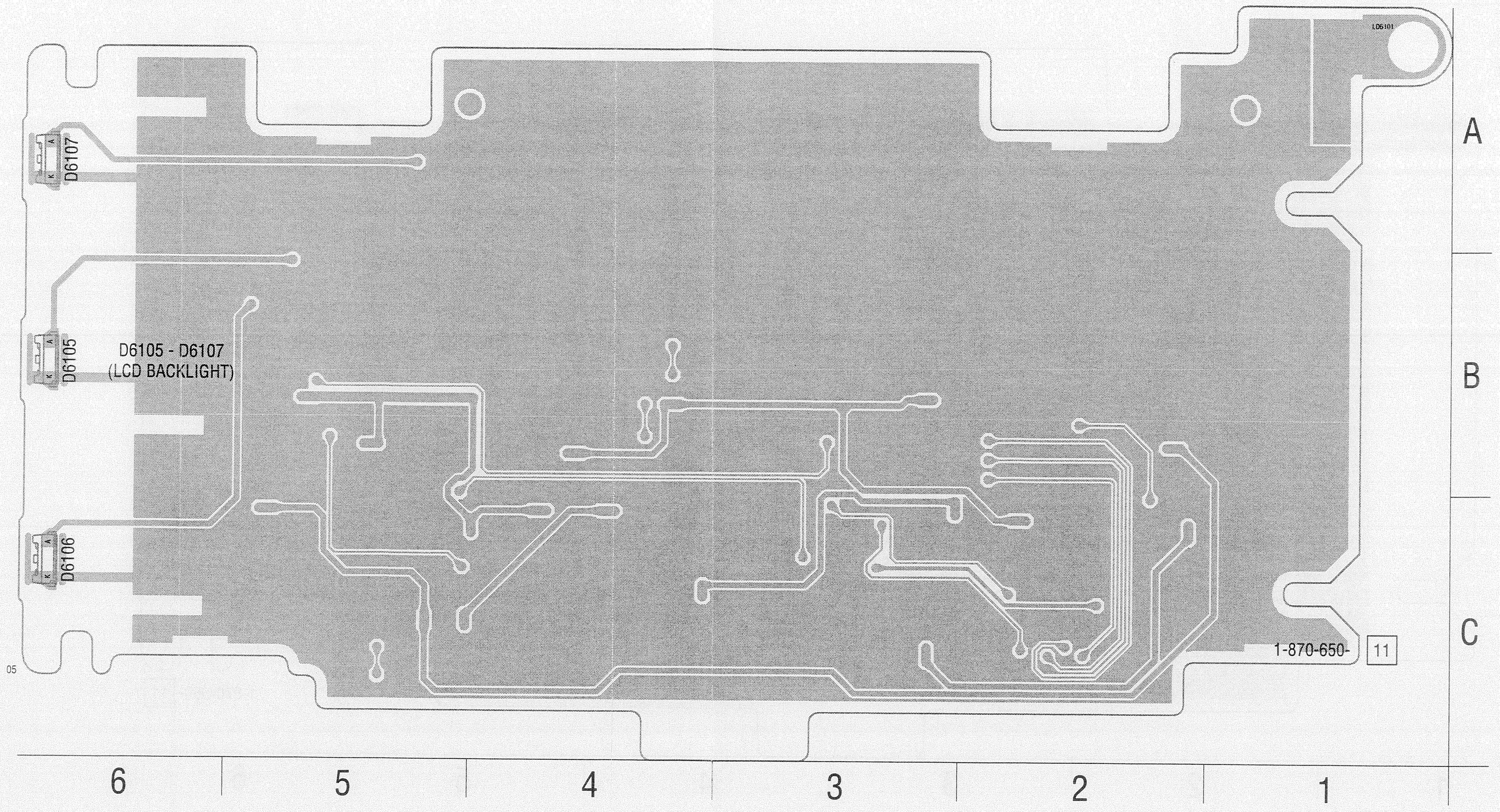


A
B
C
1
2
3
4
5
6
05
R6101
D6112
D6110
D6111
Q6107
Q6105
Q6106
R6116
R6122
R6118
R6114
R6119
R6112
R6107
R6113
Q6104
R6117
C6120
R6111
R6110
C6111
IC6101
C6107
IC6102
C6114
JL6106
JL6105
JL6104
C6101
R6108
R6104
C6108
C6110
R6105
C6105
C6106
FB6101
C6103
C6104
L6101
C6113
R6109
C6102
C6112
C6109
C6124
R6115
C6122
R6133
C6123
L6103
C6121
C6119
L6104
R6121
C6127
R6120
Q6109
D6108
C6125
R6123
Q6110
C6128
D6109
C6129
R6125
R6126
R6124
C6126
Q6108
CN6102
CN6101
L6102
C6115
C6116
C6117
1
24
1-870-650-11

PD-287 (2 layers)

LF : Uses unleaded solder.

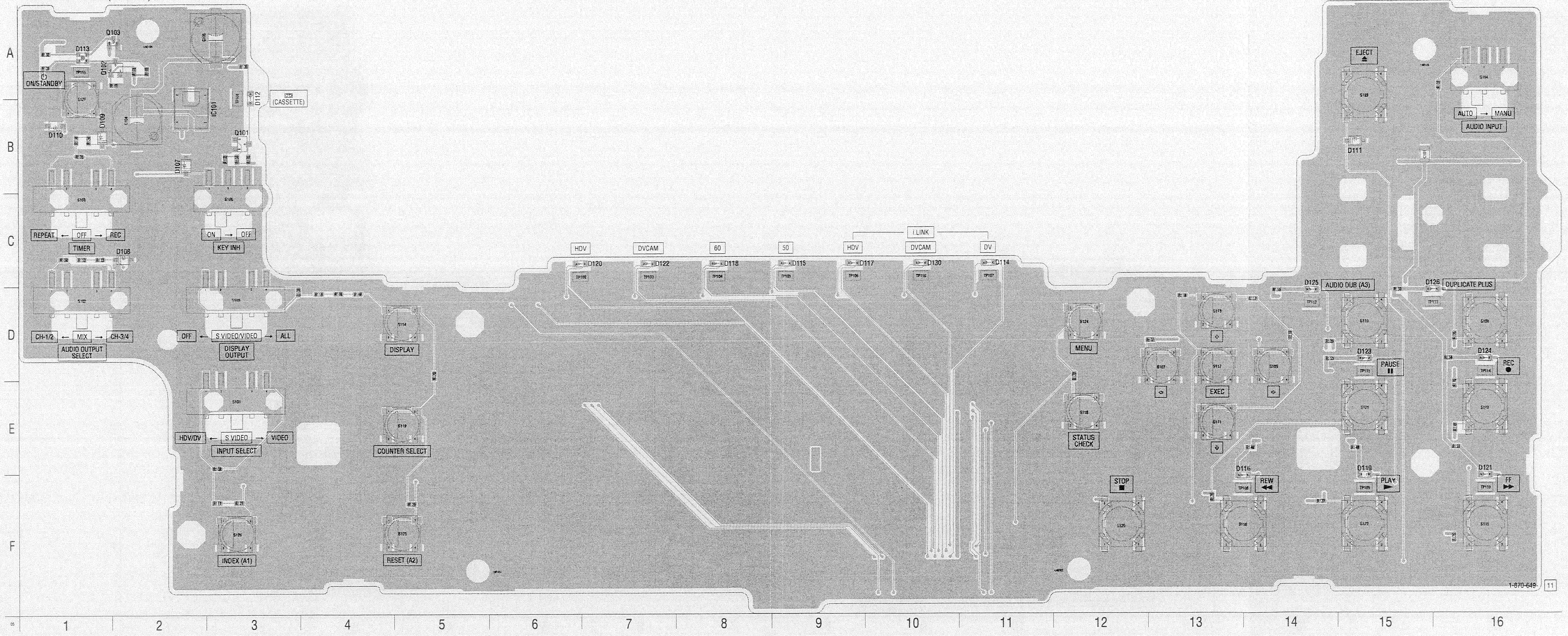
PD-287 BOARD (SIDE B)


LD6101
D6107
D6105
D6106
K
A
D6105 - D6107
(LCD BACKLIGHT)
1-870-650- 11
05
A
B
C
6
5
4
3
2
1

FR-253 (4 layers)

LF : Uses unleaded solder.

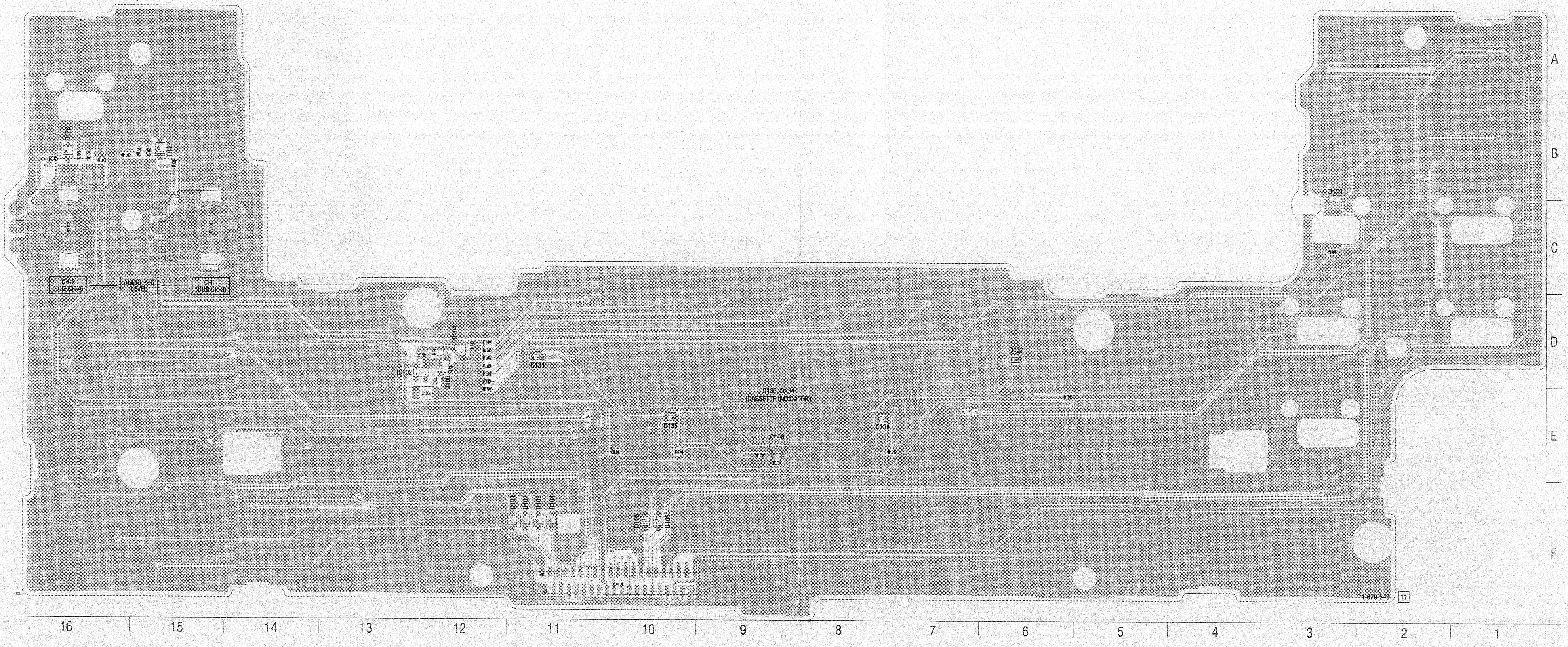
FR-253 BOARD (SIDE A)


A
B
C
D
E
F
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
Q103
D113
Q102
ON/STANDBY
D109
D110
IC101
D112
(CASSETTE)
Q101
D107
S103
S106
REPEAT
OFF
REC
TIMER
ON
OFF
KEY INH
D108
S102
S105
CH-1/2
MIX
CH-3/4
AUDIO OUTPUT SELECT
OFF
S VIDEO/VIDEO
ALL
DISPLAY OUTPUT
S114
DISPLAY
S101
HDV/DV
S VIDEO
VIDEO
INPUT SELECT
S119
COUNTER SELECT
S126
INDEX (A1)
S125
RESET (A2)
HDV
D120
DVCAM
D122
60
D118
50
D115
i.LINK
HDV
D117
DVCAM
D130
DV
D114
S124
MENU
S118
STATUS CHECK
STOP
S120
S107
S113
S117
EXEC
S109
S111
D116
REW
S116
EJECT
S123
D111
S104
AUTO
MANU
AUDIO INPUT
D125
AUDIO DUB (A3)
S110
D123
PAUSE
S121
D119
PLAY
S122
D126
DUPLICATE PLUS
S108
D124
REC
S112
D121
FF
S115
1-870-649-
11

FR-253 (4 layers)

Ⓛ : Uses unleaded solder.

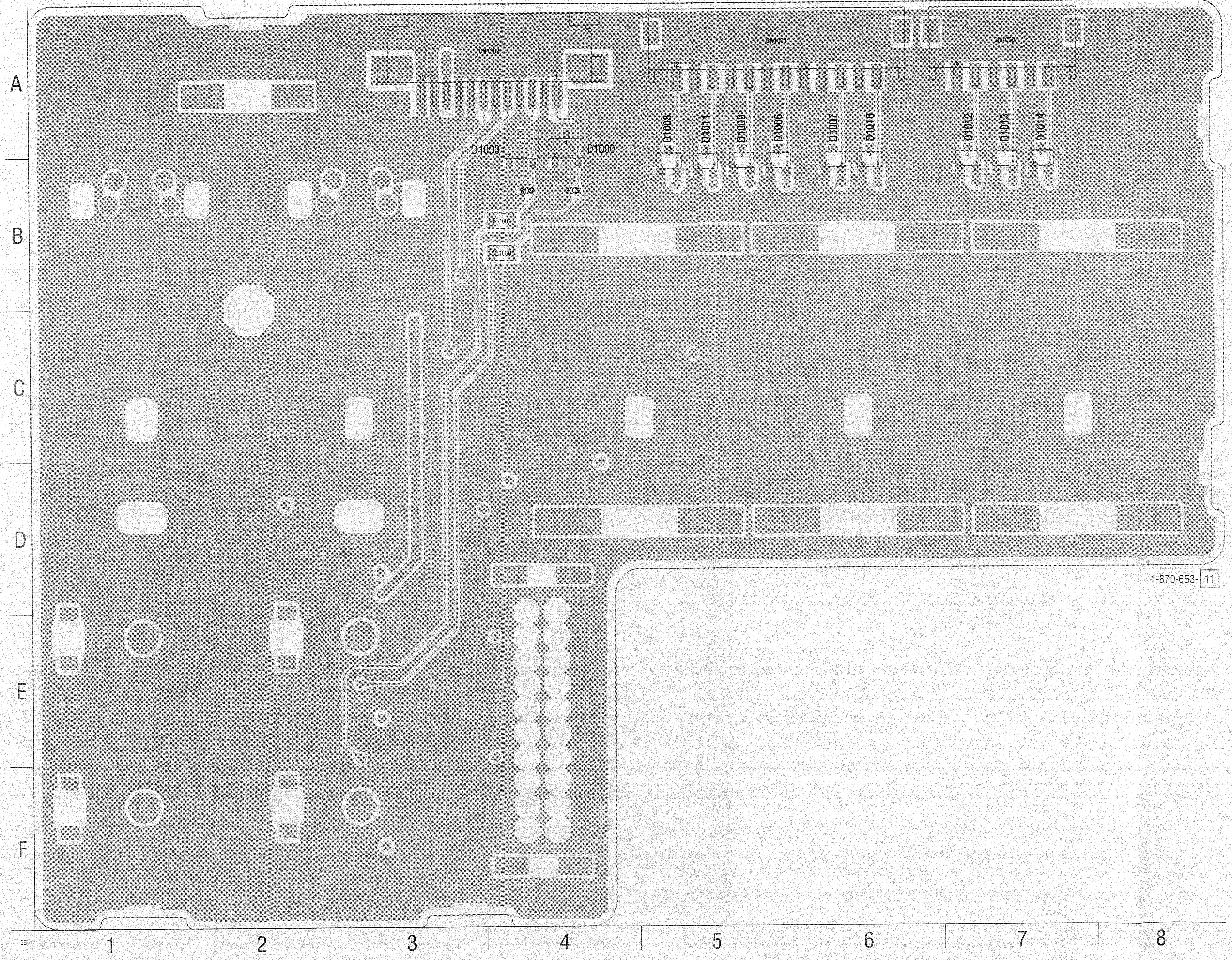
FR-253 BOARD (SIDE B)


D128
D127
RV102
RV101
CH-2
(DUB CH-4)
AUDIO REC
LEVEL
CH-1
(DUB CH-3)
Q104
IC102
Q105
C106
D131
D133, D134
(CASSETTE INDICATOR)
D133
D106
D134
D132
D129
D101
D102
D103
D104
D105
D106
CN103
1-870-649-
11
A
B
C
D
E
F
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1

JV-002 (4 layers)

LF : Uses unleaded solder.

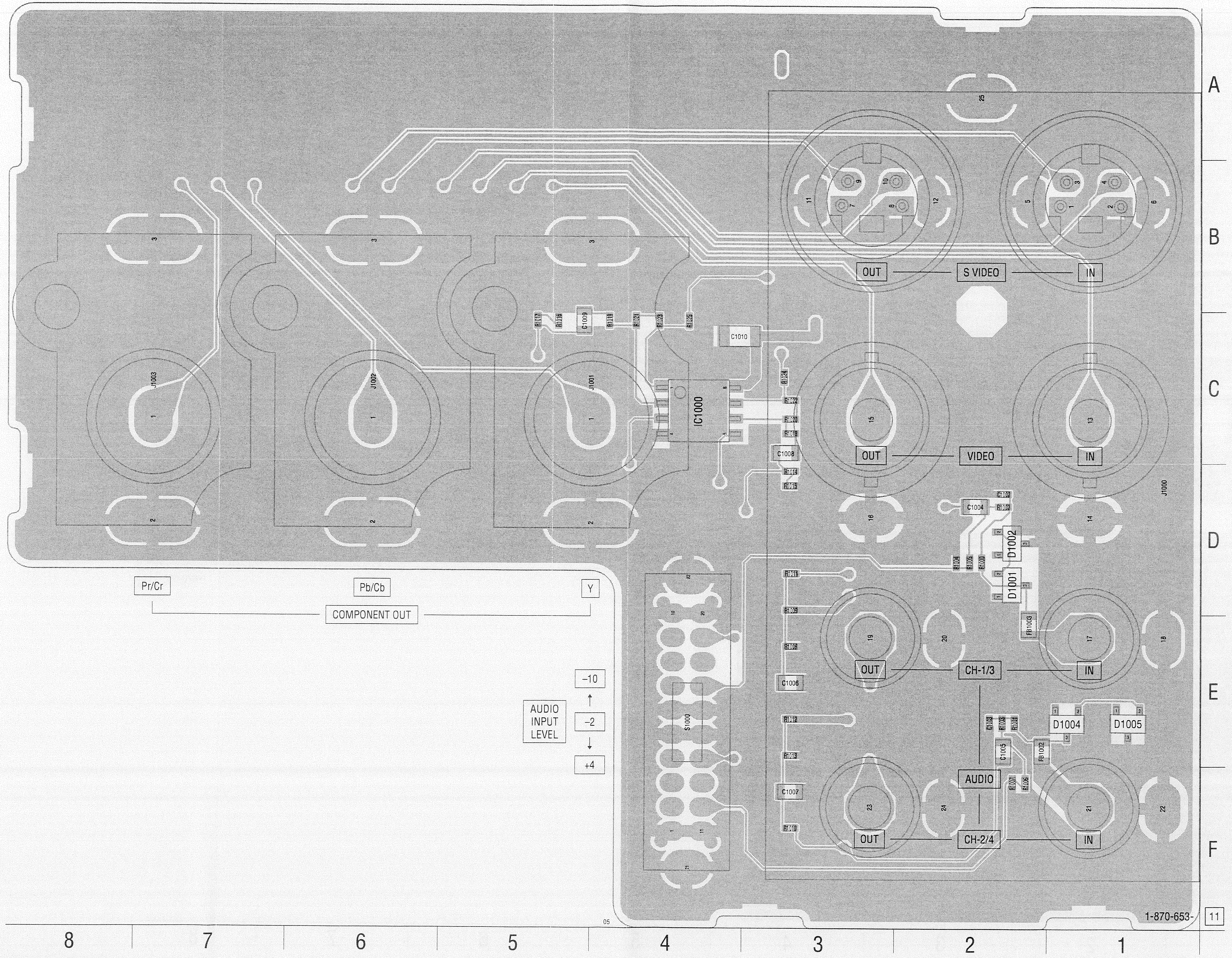
JV-002 BOARD (SIDE A)



CN1002
CN1001
CN1000
D1003
D1000
D1008
D1011
D1009
D1006
D1007
D1010
D1012
D1013
D1014
R1027
R1026
FB1001
FB1000
1-870-653-11
A
B
C
D
E
F
1
2
3
4
5
6
7
8

LF : Uses unleaded solder.

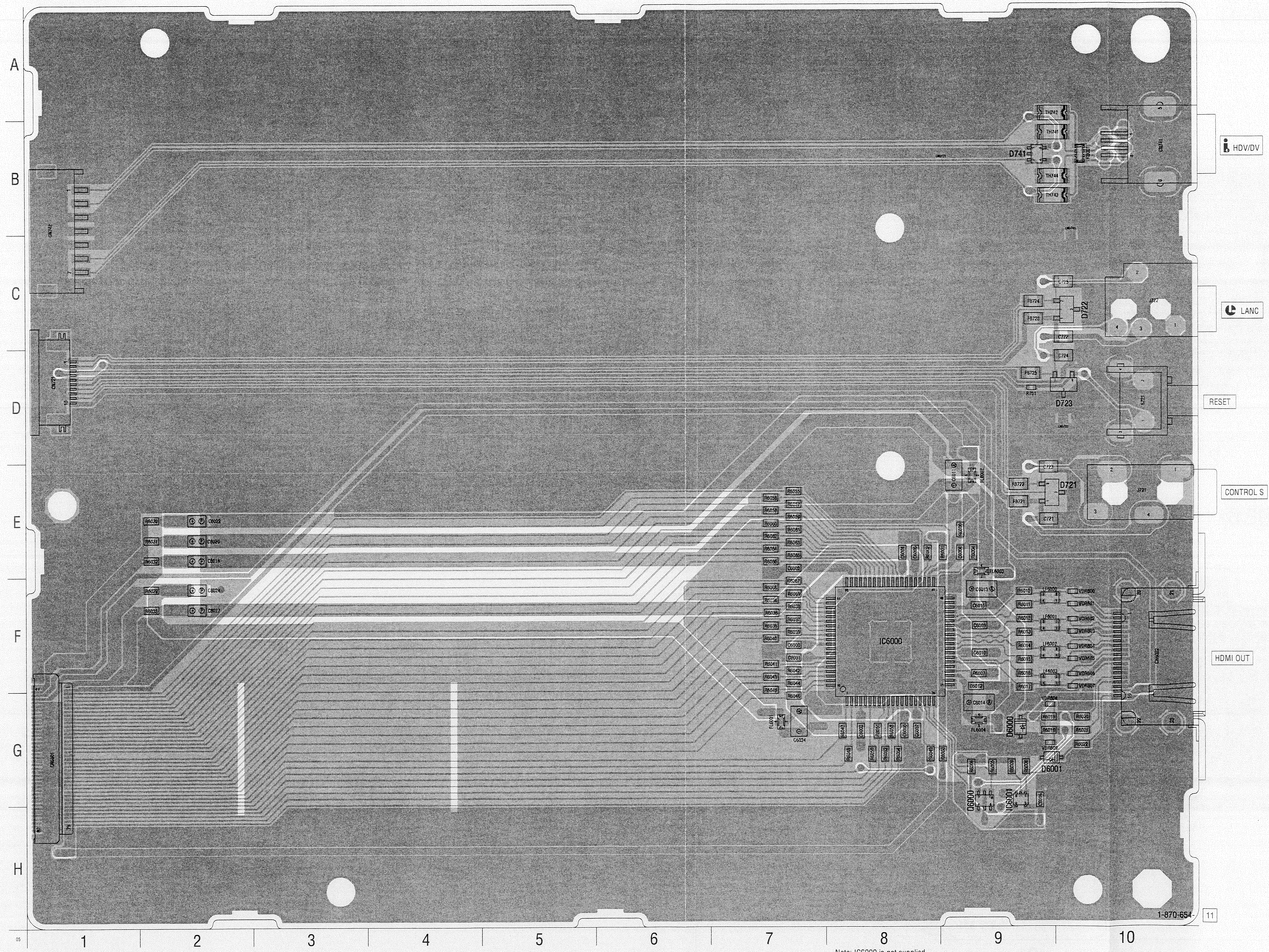
JV-002 BOARD (SIDE B)


A
B
C
D
E
F
S VIDEO
OUT
IN
VIDEO
OUT
IN
J1003
J1002
J1001
J1000
IC1000
C1009
C1010
C1008
C1004
D1002
D1001
Pr/Cr
Pb/Cb
Y
COMPONENT OUT
S1000
C1006
C1007
FB1003
CH-1/3
OUT
IN
AUDIO
INPUT
LEVEL
−10
−2
+4
D1004
D1005
C1005
FB1002
AUDIO
CH-2/4
OUT
IN
1-870-653-
11
05
8
7
6
5
4
3
2
1

JK-309 (4 layers)

LF : Uses unleaded solder.

JK-309 BOARD

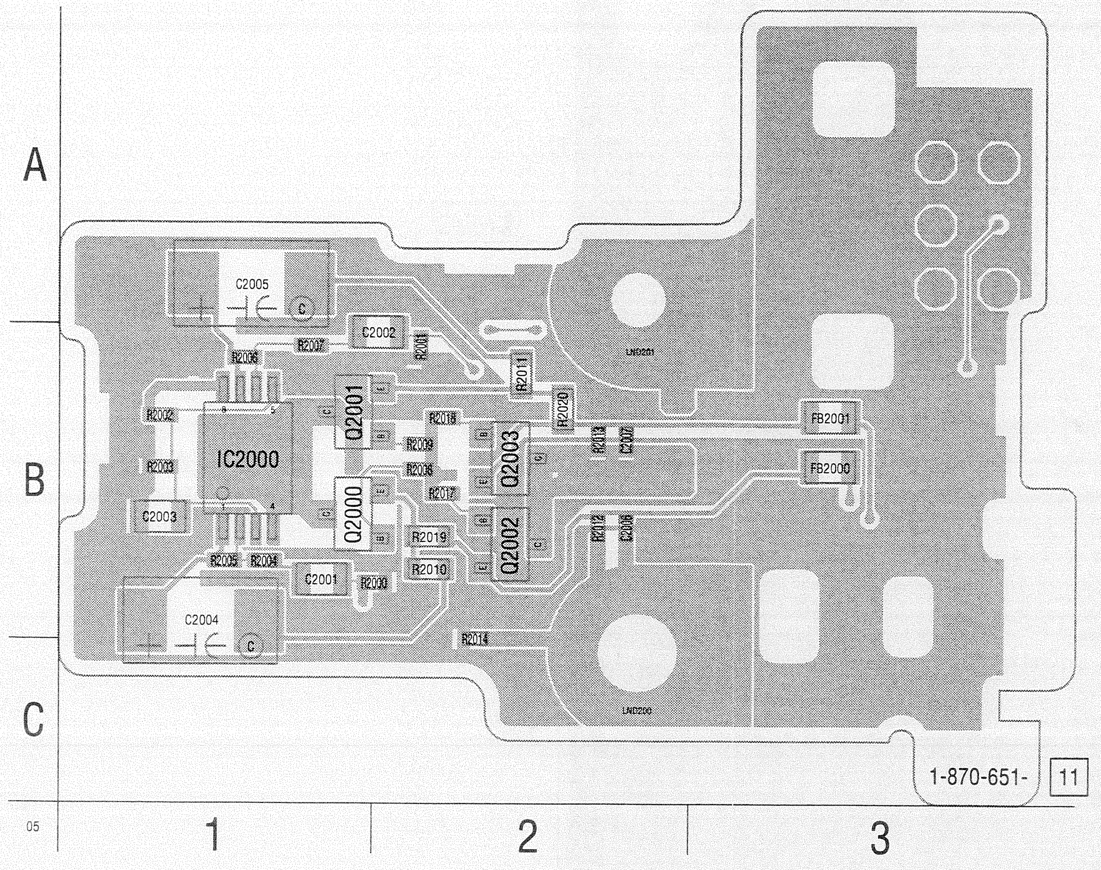

A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
8
9
10
D741
HDV/DV
D722
LANC
D723
RESET
D721
CONTROL S
IC6000
HDMI OUT
D6000
D6001
IC6001
1-870-654-
11

Note: IC6000 is not supplied,
but this is included in JK-309 complete board.

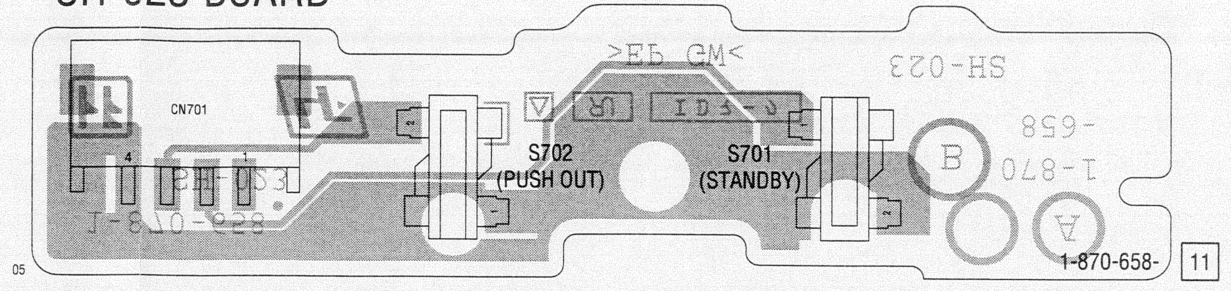
HP-141 (4 layers), SH-023 (4 layers)

LF : Uses unleaded solder.

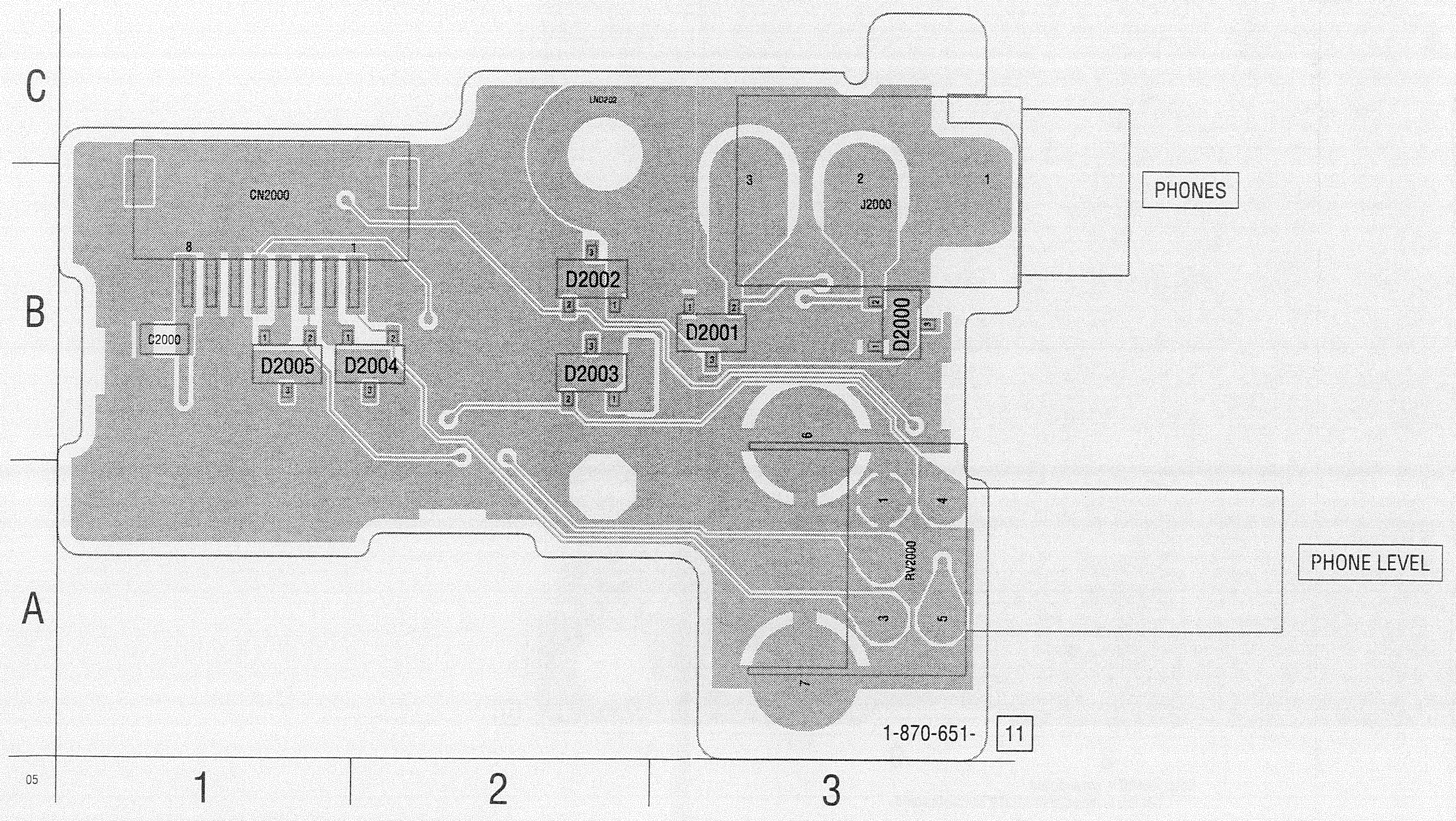
HP-141 BOARD (SIDE A)


A
B
C
1
2
3
C2005
C2002
R2006
R2007
R2001
R2011
R2020
R2002
R2003
IC2000
Q2001
Q2000
Q2003
Q2002
R2018
R2009
R2008
R2017
R2019
R2010
R2013
R2015
R2012
R2016
FB2001
FB2000
C2003
R2005
R2004
C2001
R2000
C2004
R2014
LND201
LND200
1-870-651-
11
05

SH-023 BOARD

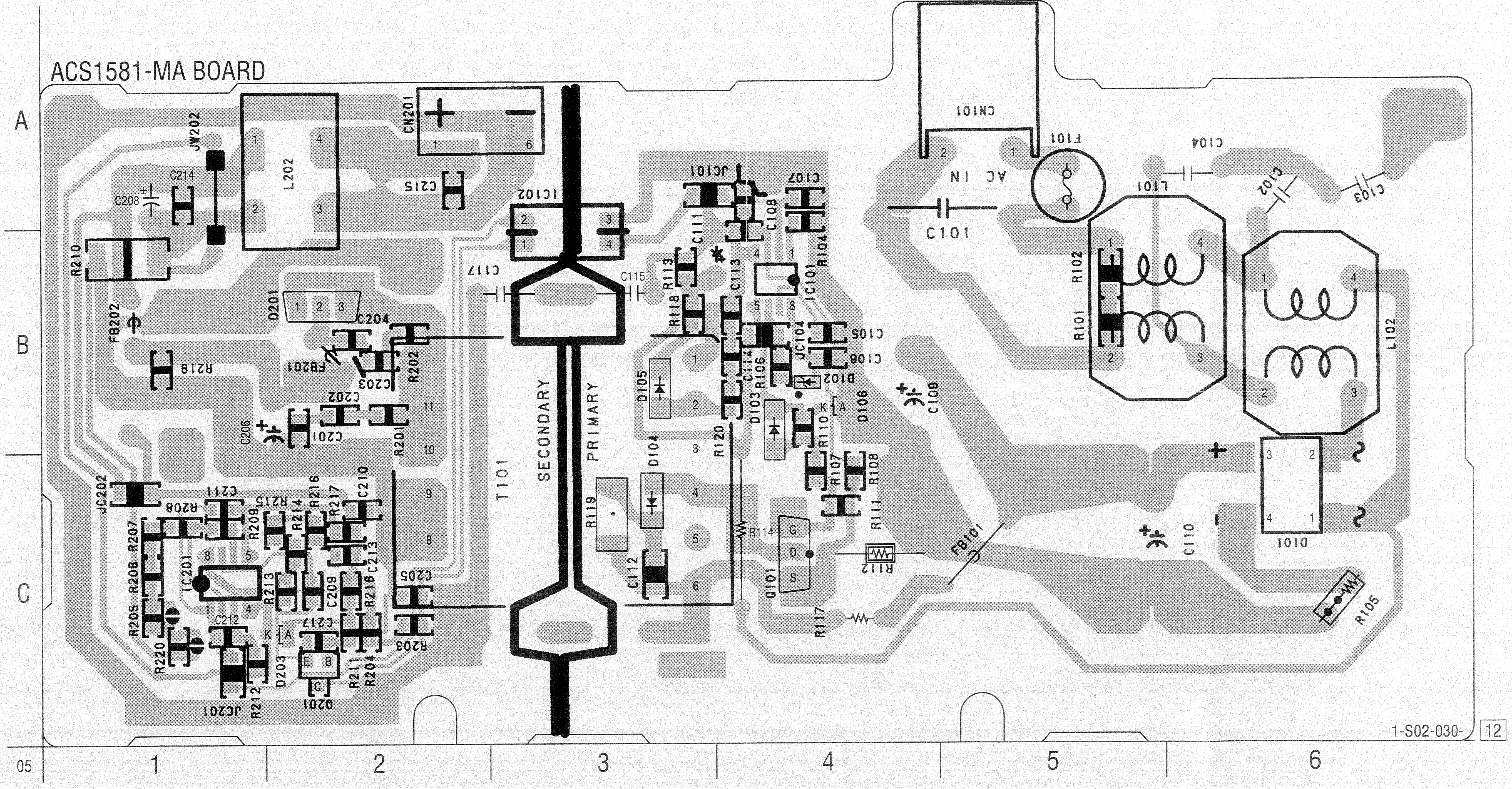

CN701
4
1
S702
(PUSH OUT)
S701
(STANDBY)
B
A
1-870-658-
11
05

HP-141 BOARD (SIDE B)


C
B
A
1
2
3
CN2000
8
1
C2000
D2005
D2004
D2002
D2003
D2001
D2000
J2000
3
2
1
PHONES
LND202
RV2000
6
4
1
3
5
7
PHONE LEVEL
1-870-651-
11
05

ACS1581-MA (1 layer)

: Uses unleaded solder.


ACS1581-MA BOARD
A
B
C
05
1
2
3
4
5
6
1-S02-030-
12
CN201
JW202
L202
C215
C214
C208
R210
FB202
D201
C204
FB201
C203
R202
R219
C202
C206
C201
R201
JC202
C211
R208
R215
R216
R217
C210
R209
R214
R207
IC201
R213
C209
C213
R218
C205
R205
R220
C212
C217
D203
Q201
E
B
C
K
A
R211
R204
R203
JC201
R212
T101
SECONDARY
PRIMARY
IC102
C117
C115
JC101
C107
C108
C111
C113
R113
R118
IC101
R104
C105
C106
JC104
R106
C114
D102
D105
D103
D106
R110
R120
D104
R107
R108
R119
R111
R114
C112
G
D
S
Q101
R112
R117
FB101
CN101
AC IN
F101
C101
C104
C102
C103
L101
R102
R101
L102
C109
D101
C110
R105

4-4. MOUNTED PARTS LOCATION

no mark : side A
* mark : side B

RP-243 BOARD

C1001	B-4
C1002	A-1
C1003	B-4
C1004	B-3
C1005	B-3
C2000	B-8
C2001	A-7
C2002	A-8
C2003	B-8
C2004	B-8
C2005	B-8
C2006	B-8
C2007	B-8
C2008	B-8
C2009	B-8
C2010	B-8
C2011	B-8
C2012	B-8
C2013	B-7
C2014	B-8
C2015	B-9
CN1001	B-5
CN1002	C-4
CN1003	B-3
CN1004	B-1
CN1005	C-6
CN2000	C-8
IC1001	B-1
IC2000	B-8
L2000	A-7
L2001	A-8
L2002	A-8
Q1001	B-3
R1004	A-7
R1099	B-1
R1100	B-1
R1101	B-1
R1102	B-1
R1106	B-3
R1107	B-3
R1110	B-3
R1111	B-3
R2003	B-8
R2004	B-8
R2007	B-8
R2008	B-8
R2009	B-8
R2011	B-8
R2013	B-8
R2014	B-7
R2015	B-8
R2018	C-8
R2019	C-8
R2020	C-8
R2021	C-8

VD-036 BOARD

* BT1001	B-3
* BZ4601	J-2
* C1002	C-3
* C1003	B-3
C1004	E-2
C1005	E-3
* C1007	C-2
* C1008	C-2
* C1009	C-3
* C1010	B-3
* C1011	C-2
* C1012	B-3
* C1013	B-3
* C1014	B-3
* C1015	C-3
* C1016	C-2
* C1018	C-3
* C1021	C-4
* C1023	C-2
* C1024	C-4
* C1026	C-4
* C1027	C-2
* C1028	C-2
* C1029	C-4
* C1030	C-4
* C1031	C-2
* C1033	C-2
* C1034	C-4
* C1036	C-4
* C1037	C-4
* C1038	C-4
* C1041	D-3
* C1042	C-2
* C1043	D-2
* C1044	D-2
* C1045	D-2
* C1046	D-3
* C1047	D-3
* C1048	D-4
* C1049	D-4
* C1057	E-3
* C1058	C-1
* C1059	D-1
* C1060	E-2
* C1061	E-2
* C1062	E-4
* C1063	D-5
* C1064	E-3
* C1073	C-1
* C1074	D-1
* C1075	F-1
* C1076	F-2
* C1077	F-3
* C1078	E-2
* C1079	F-2
* C1080	F-3
* C1081	C-1
* C1082	D-1
* C1083	F-3
* C1084	F-3
* C1085	F-3
* C1087	F-2
* C1090	E-3
* C1091	D-5
* C1093	C-3
* C1094	C-2
C1095	F-2
C1096	F-2
C1097	F-2
C1098	F-2
C1099	E-2
* C1201	C-6
* C1202	C-6
* C1203	C-6
* C1204	D-7
* C1205	D-7
* C1206	C-6
* C1207	C-6
* C1208	C-6
* C1209	C-7
* C1211	C-6
* C1212	C-7
* C1213	C-6
* C1214	D-6
* C1215	C-7
* C1216	C-7
* C1217	C-6
* C1219	C-6
* C1221	D-7
* C1224	D-7
* C1225	D-6
* C1226	D-7
* C1227	D-7
* C1228	D-6
* C1229	D-8
* C1232	D-5
* C1233	D-6
* C1235	E-5
* C1237	D-6
* C1240	E-6
* C1241	E-7
* C1242	E-7
* C1245	D-6
* C1246	D-6
* C1247	E-5
* C1249	E-6
* C1258	E-5
* C1259	D-5
* C1260	E-5
* C1262	F-7
* C1263	F-7
* C1264	F-6
* C1276	F-5
* C1277	F-6
* C1279	E-5
* C1280	D-5
* C1281	F-4
* C1282	E-6
* C1285	F-4
* C1288	F-4
* C1289	F-6
* C1292	F-7
* C1293	F-7
* C1294	F-7
* C1295	F-7
* C1296	F-6
* C1297	D-7
C1401	D-11
C1402	C-12
* C1404	B-11
* C1406	B-11
* C1407	B-12
* C1409	C-12
* C1410	B-11
* C1411	C-12
* C1412	B-12
* C1413	B-12
* C1415	C-12
* C1417	B-12
* C1418	C-12
* C1420	B-11
* C1421	B-11
* C1422	B-12
* C1423	B-12
* C1424	D-12
* C1425	D-10
* C1426	D-12
* C1427	C-10
* C1430	D-10
* C1432	C-10
* C1433	C-12
* C1435	D-10
* C1437	C-9
* C1440	D-11
* C1442	C-9
* C1445	D-11
* C1447	C-9
* C1450	C-9
* C1451	C-9
* C1453	D-9
* C1454	E-12
* C1460	C-9
* C1476	E-12
* C1477	F-12
* C1478	E-11
* C1479	D-12
* C1480	C-11
* C1481	C-11
* C1482	B-11
* C1483	C-11
C1484	B-12
* C1485	C-12
* C1801	G-7
* C1802	H-6
* C1804	H-7
* C1805	G-7
* C1806	G-7
* C1807	H-7
* C1808	H-7
* C1809	G-8
* C1810	G-7
* C1811	H-7
* C1812	G-7
* C1813	G-7
* C1814	G-7
* C1816	H-7
* C1818	H-7
* C1819	G-7
* C1820	H-7
* C1821	H-7
C1822	G-7
* C1823	H-8
* C1824	H-7
* C1825	H-8
* C1826	H-7
C1827	G-7
C1828	G-7
C1829	G-7
C1830	G-7
* C1831	G-7
* C1832	G-8
* C1833	G-7
* C1834	G-8
* C1835	H-8
* C1837	G-7
* C1838	G-7
* C1839	H-8
* C1840	G-7
* C1841	G-7
* C1842	G-7
* C1843	G-8
C1871	I-8
C1872	I-8
C1873	I-7
C1875	I-8
C1877	I-7
C1878	I-7
C1879	I-7
C1880	H-7
C1881	H-8
C1882	H-8
C2001	F-7
C2002	F-7
C2003	F-7
C2004	J-12
C2005	J-12
C2006	J-12
C2007	J-11
C2008	J-12
C2009	J-12
C2010	I-12
C2011	I-12
C2012	J-13
C2013	J-13
* C2201	F-6
* C2202	G-6
* C2203	G-6
* C2204	G-6
* C2206	F-6
* C2208	F-5
* C2209	G-6
C2210	G-6
C2211	F-6
C2212	F-6
C2213	F-6
* C2214	F-6
* C2215	F-6
* C2216	F-6
* C2217	G-6
* C2219	F-6
C2220	F-6
* C2221	G-6
C2222	F-6
* C2224	F-6
* C2225	F-5
* C2226	G-6
* C2227	F-6
C2228	F-5
* C2229	F-6
* C2230	F-6
* C2231	G-6
* C2232	F-6
C2233	F-5
* C2234	F-5
C2236	F-5
C2238	F-5
C2239	F-7
C2240	F-6
C2401	F-5
C2502	F-5
C2503	F-6
C2601	C-6
C2602	D-6
C2801	F-5
C2802	E-4
C2803	F-4
C2804	F-4
C2805	F-3
C2806	F-4
C2807	F-4
C2808	F-4
C2809	F-4
C2810	F-3
C2811	F-4
C2812	E-4
C2813	F-3
C2814	E-4
C2815	E-3
C2816	E-3
C2817	E-4
C2818	E-4
C2819	E-4
C2820	E-4
C2821	E-4
C2822	E-4
C3001	E-9
C3002	E-9
C3003	F-8
C3004	F-9
C3005	E-8
C3006	F-8
C3008	F-9
C3009	E-9
C3010	F-9
C3011	E-9
C3012	F-9
C3013	E-9
C3015	F-9
C3016	F-9
C3017	E-9
C3018	E-8
C3019	F-9
C3020	E-10
C3021	E-9
C3022	E-8
C3023	E-8
C3024	F-8
C3025	E-9
C3026	F-9
C3027	F-9
C3201	B-4
C3202	B-5
C3203	B-4
C3204	A-5
C3205	B-5
C3206	B-4
C3207	B-4
C3208	B-5
C3209	B-5
C3210	B-5
C3211	B-5
C3212	B-5
C3214	B-4
C3215	B-5
C3216	B-4
C3217	B-5
C3218	B-4
C3219	C-5
C3220	C-5
* C3600	J-11
* C3601	J-11
* C3602	J-11
* C3603	J-11
* C3604	J-10
* C3605	J-10
* C3606	J-11
* C3607	J-11
* C3608	J-11
* C3609	J-11
* C3611	K-12
* C3613	K-12
* C3614	L-12
* C3615	K-12
* C3616	K-12
* C3617	L-12
* C3618	L-12
* C3619	J-12
* C3620	J-12
* C3621	L-12
* C3622	K-12
* C3623	J-12
* C3624	J-12
* C3625	J-12
* C3626	L-12
* C3627	K-11
* C3628	K-12
* C3629	J-12
* C3630	K-12
* C3631	K-11
* C3632	K-11
* C3633	K-11
* C3634	K-11
* C3635	K-10
* C3636	K-10
* C3637	J-11
* C3638	K-11
* C3639	K-11
* C3640	K-11
* C3641	K-11
* C3642	K-10
* C3643	K-10
* C3644	K-10
* C3645	L-10
* C3646	L-12
* C3647	L-11
* C3648	L-11
* C3649	L-11
* C3650	L-10
* C3651	L-10
* C3652	L-11
* C3653	L-11
C3654	B-1
C3655	B-2
C3656	B-2
C3660	B-1
C3661	B-2
C3662	C-2
* C3663	J-11
* C3664	J-10
C3665	B-2
C3666	B-1
* C3667	L-12
* C3668	L-12
C4001	I-5
C4002	I-5
C4003	I-5
C4004	I-5
C4005	H-5
C4006	H-5
C4007	H-5
C4008	H-5
C4009	H-4
C4010	H-5
C4011	H-4
C4012	H-4
C4013	H-5
C4014	H-4
C4015	H-4

4-3. PRINTED WIRING BOARDS

no mark : side A
* mark : side B

C4016	H-4
C4017	H-4
C4018	I-4
C4019	I-4
C4020	I-4
C4028	I-4
C4030	I-4
C4031	I-4
C4032	J-4
C4033	J-4
C4034	J-4
C4035	J-5
C4036	J-5
C4037	J-5
C4038	J-5
C4039	J-5
C4041	H-5
C4042	H-5
C4043	H-5
C4044	I-3
C4045	J-5
C4060	H-5
C4061	H-5
C4062	I-3
C4063	H-5
C4067	B-12
C4201	I-5
C4202	I-7
C4204	I-7
C4205	I-7
C4208	I-6
C4209	J-7
C4401	J-8
C4402	K-8
C4404	G-4
C4601	I-1
C4602	I-1
C4603	I-3
C4604	I-3
C4605	H-3
C4606	H-3
C4609	I-2
C4610	I-2
C4611	I-2
C4612	H-2
* C4613	F-12
* C4614	F-12
C4615	J-2
* C4616	F-11
* C4617	K-2
* C4618	K-2
C4619	K-2
C4621	K-1
C4622	J-1
C4623	H-1
C4624	H-1
C4625	I-3
C4626	J-1
C4627	H-3
* C5000	A-8
* C5001	A-8
C5002	B-6
C5003	B-6
C5004	C-6
C5005	C-6
C5006	C-6
C5007	B-6
C5008	C-7
C5009	B-7
C5010	C-7
C5011	B-7
C5012	C-7
C5013	B-7
C5014	B-7
C5015	D-7
C5016	D-7
C5401	G-10
C5402	G-10
C5403	G-11
C5404	E-12
C5405	G-11
C5406	E-12
C5407	E-13
C5408	E-12
C5411	E-12
* C5412	D-11
* C5413	E-10
C5414	H-11
C5415	G-11
* C5416	E-10
* C5417	E-10
C5418	H-10
* C5419	E-11
C5420	H-10
C5421	H-10
C5423	E-12
C5424	E-12
C5425	E-12
C5427	F-12
C5428	F-12
C5429	F-12
C5430	E-12
C5431	F-12
C5432	E-11
C5434	E-12
C5435	E-12
C5436	E-11
C5438	C-8
C5439	F-11
C5440	F-12
C5442	C-8
C5443	E-12
C5444	F-12
C5447	C-9
C5448	F-12
C5449	E-11
C5450	E-11
C5451	E-11
C5452	F-12
C5453	C-9
C5454	C-9
C5455	B-9
C5456	B-9
C5457	B-9
C5458	E-11
C5459	C-9
C5460	E-11
C5461	B-9
C5462	C-9
C5463	C-9
C5464	C-8
C5465	I-12
* C5466	E-10
* C5467	F-11
* C5470	F-11
* C5476	E-10
* C5477	E-10
* C5478	E-11
* C5479	E-11
* C5480	E-11
C5800	I-11
C5801	I-11
C5802	I-11
C5803	I-11
C5804	I-11
C5805	I-11
C5806	H-11
C5807	I-11
C5808	I-11
C5809	I-11
C5810	H-11
C5811	I-11
C5812	I-11
C5813	H-11
C5814	I-10
C5815	H-11
C5823	J-10
C5824	J-10
C5825	J-10
C5828	J-10
* C5829	J-8
C5830	H-10
C5831	H-10
C5832	H-10
C5833	H-9
C5834	J-10
C5835	H-9
* C5836	J-9
* C5837	J-9
* C5838	J-8
* C5840	K-8
* C5842	J-10
* C5844	K-9
* C5845	K-9
* C5846	J-9
* C5847	J-9
* C5848	J-8
* C6028	G-12
* C6029	G-12
* C6032	G-12
* C6035	H-13
C6401	L-11
C6402	L-12
C6403	L-12
C6404	L-12
C6405	L-12
C6406	L-11
C6407	L-12
C6408	L-11
C6409	L-11
C6410	L-12
C6411	L-12
C6412	L-11
C6413	K-12
C6414	L-12
C6415	K-12
C6416	L-11
C6417	K-12
C6418	L-11
C6419	K-11
C6420	K-11
C6421	K-12
C6422	K-12
C6424	K-11
C6425	K-12
C6426	K-12
C6427	K-12
C6428	J-11
C6429	K-12
C6430	K-11
C6431	K-11
C6601	L-9
C6602	L-10
C6603	L-9
C6604	L-10
C6605	K-10
C6606	L-10
C6607	K-9
C6608	K-9
C6609	K-10
C6610	L-9
C6611	L-9
C6612	L-9
C6613	L-10
C6614	L-10
C6615	L-10
C6616	L-10
C6617	L-10
C6618	K-10
C6619	K-9
C6620	K-10
C6621	K-10
C6622	K-10
C6624	K-9
C6625	K-10
C6626	K-10
C6627	K-10
C6628	K-10
CN1401	C-13
* CN2001	E-1
CN2002	I-13
* CN3201	A-6
* CN3600	B-1
* CN3601	K-13
CN4001	B-13
* CN4002	L-4
* CN4601	H-1
* CN4602	E-13
CN4604	K-1
* CN4605	K-1
CN5401	A-10
CN5402	G-12
CN5403	A-11
* CN6001	H-13
CN6401	J-13
* D1003	C-3
* D1006	E-2
D1008	F-3
D1009	F-3
D1010	F-1
D1011	E-2
* D1203	F-6
* D1205	F-7
D1401	C-12
D1402	D-12
D1403	D-12
D1404	D-12
D1405	D-12
D1406	D-12
D1407	C-11
* D1413	C-11
* D1414	B-11
* D1415	B-11
* D1416	D-10
* D1418	E-12
* D1419	E-13
D1420	D-12
D3001	E-9
D3002	E-10
D3003	E-10
* D3600	L-10
* D3601	L-10
* D3602	L-12
D4001	H-5
D4002	H-5
D4004	B-12
D4005	B-12
D4006	B-12
D4603	I-1
* D4604	F-11
* D4605	F-11
D5001	D-7
* D5401	E-10
* F1001	C-4
* F1002	C-4
* F1003	C-4
* F1004	C-4
* F1005	C-4
* F1201	E-8
* F1202	E-8
* F1203	D-5
* F1204	E-5
* F1205	D-5
F1401	D-10
F1402	C-12
F1403	D-10
F1404	B-11
* F1405	C-10
* F1407	D-10
* F1408	D-9
* F1409	D-13
F1410	C-11
* F1412	D-9
* F1419	D-13
* F4601	J-2
* FB1801	H-7
* FB1803	G-7
* FB1804	G-6
FB2001	F-7
FB2002	J-12
* FB2202	G-6
FB2601	D-6
FB2802	F-3
FB2803	F-4
FB3001	E-8
FB3201	B-4
FB3202	B-4
FB4001	H-5
FB4002	I-3
FB4003	H-5
FB4004	H-5
FB4201	I-7
FB4601	I-3
FB5000	D-7
FB6401	K-12
FL5800	H-11
FL5801	I-10
FL5802	H-11
* FL6000	H-13
* FL6001	H-13
* FL6002	G-13
* IC1001	C-3
* IC1002	F-3
IC1003	F-2
IC1004	E-2
IC1005	F-3
IC1006	E-2
* IC1201	D-7
* IC1203	F-7
IC1401	C-12
* IC1402	B-11
* IC1403	E-12
* IC1404	D-12
* IC1407	D-12
* IC1409	B-12
IC1801	G-7
IC1871	I-7
IC1872	H-8
IC1873	H-7
IC1874	H-8
IC1875	I-7
IC1876	H-8
IC2001	J-12
IC2202	F-6
IC2501	E-6
IC2601	C-6
IC2801	E-4
IC3001	F-9
IC3201	B-5
* IC3600	J-11
* IC3601	K-12
* IC3602	K-10
* IC3603	K-10
IC3604	B-1
IC3610	C-1
IC3611	C-1
IC4003	I-5
IC4201	I-6
IC4202	J-7
IC4403	G-3
IC4601	H-2
IC4602	J-3
IC4603	J-2
* IC4604	F-11
IC4605	J-1
IC5000	C-7
IC5001	B-7
IC5401	G-10
IC5402	E-12
IC5403	C-9
IC5404	C-8
* IC5405	E-11
* IC5406	E-11
IC5800	I-11
IC5821	J-10
IC5822	J-11
IC5823	J-10
* IC5824	J-9
IC5825	I-9
* IC5826	J-9
* IC5827	J-8
* IC5828	J-8
* IC5829	K-8
* IC5831	J-9
* IC5835	K-9
* IC5836	K-9
* IC5837	K-9
* IC5838	K-9
* IC5839	J-8
* IC6002	G-12
IC6401	K-11
IC6601	K-10
* L1003	C-2
* L1004	D-2
* L1005	E-2
* L1006	E-2
* L1007	E-3
* L1008	E-4
* L1009	E-4
* L1010	D-4
* L1013	C-1
* L1014	D-1
* L1015	F-1
* L1016	F-2
* L1017	F-3
* L1018	E-2
* L1019	F-3
* L1020	C-1
* L1021	D-1
* L1022	F-3
* L1023	F-3
* L1024	F-2
L1025	F-2
L1026	F-2
* L1205	E-5
* L1206	D-5
* L1207	F-5
* L1208	E-8
* L1209	E-6
* L1211	E-7
* L1214	F-5
* L1216	E-5
* L1217	D-5
* L1218	F-4
* L1219	F-6
* L1222	F-4
* L1223	F-4
* L1404	D-11
* L1406	B-10
* L1408	C-9
* L1410	D-11
L1411	C-10
* L1801	G-7
* L1802	H-7
* L1803	H-8
* L1804	H-7
* L1805	G-7
L1871	I-8
L1872	I-8
L1873	I-7
L2001	J-11
L2002	I-12
L2003	J-13
* L2201	G-7
L2203	F-7
L2204	F-7
L2205	F-5
L2206	F-5
* L2207	G-6
L3001	F-9
L3002	F-10
L3003	E-9
L3005	F-9
L3006	F-10
L3007	F-9
L3008	F-9
L3009	F-9
L3201	A-4
* L3600	K-10
L4001	B-12
L4201	I-7
L4202	I-7
L4601	I-1
* L4602	F-12
* L4603	J-2
L4604	H-1
* L4605	H-2
L5401	G-11
L5402	E-13
L5403	I-12
* L5404	E-10
* L5405	E-10
L5821	J-10
L5822	J-9
* L5823	J-10
L6401	K-12
L6402	L-11

4-3. PRINTED WIRING BOARDS

no mark : side A
* mark : side B

L6403	K-11
L6404	J-11
L6601	L-10
L6602	K-10
L6603	K-10
LF3201	B-5
LP001	A-12
* Q1002	C-4
* Q1003	C-3
* Q1004	D-2
* Q1005	D-2
* Q1006	D-2
* Q1007	D-3
* Q1008	D-4
* Q1009	D-4
* Q1010	D-4
* Q1011	C-2
* Q1014	C-2
* Q1015	D-2
* Q1016	D-2
* Q1017	D-2
* Q1018	D-3
* Q1019	D-4
* Q1020	D-4
* Q1021	D-4
* Q1022	F-3
Q1023	F-2
* Q1024	B-2
* Q1025	B-2
* Q1201	C-8
* Q1202	D-7
* Q1203	D-7
* Q1205	E-6
* Q1206	D-6
* Q1207	F-5
* Q1209	E-7
* Q1210	E-8
* Q1211	E-6
* Q1215	E-6
* Q1216	D-6
* Q1217	F-5
* Q1219	E-8
* Q1220	E-7
* Q1221	E-6
* Q1222	F-6
Q1401	D-11
Q1402	D-11
Q1403	D-11
Q1404	C-11
Q1405	C-11
Q1406	C-12
Q1407	B-11
Q1408	C-12
Q1409	C-12
Q1410	C-12
Q1411	C-11
Q1412	C-11
Q1415	D-12
* Q1418	E-11
Q1419	D-12
Q1420	D-12
Q1424	B-11
* Q1425	D-12
* Q1426	D-12
* Q1427	D-12
* Q1428	E-13
* Q1429	C-10
* Q1430	C-11
* Q1431	D-11
* Q1432	C-11
Q2001	G-8
Q2002	F-8
Q2003	G-8
Q2004	F-7
Q2005	G-7
Q2007	F-7
Q2008	F-7
Q2009	F-7
* Q3600	J-12
* Q3601	J-12
* Q3602	K-10
* Q3603	L-10
* Q3604	L-9
* Q3605	L-9
* Q3606	L-11
* Q3607	L-11
* Q3608	L-11
Q3609	B-2
Q3610	B-2
Q3611	B-2
Q3612	B-2
Q3613	B-2
Q3614	B-2
* Q3615	J-11
* Q3616	J-10
* Q3617	J-10
* Q3618	J-10
* Q3619	L-12
Q4002	J-5
Q4003	J-5
Q4004	J-5
Q4005	J-5
Q4006	J-5
Q4007	A-12
Q4008	B-12
Q4601	K-2
Q4602	K-2
Q4603	K-2
* Q4604	F-11
Q4605	K-1
Q4606	K-1
Q4607	J-1
Q5401	G-10
Q5402	C-9
* Q5403	E-11
* Q5404	E-10
Q5405	C-9
Q6401	L-12
Q6603	L-9
* R1016	B-3
* R1017	C-4
* R1022	C-3
* R1029	C-4
* R1030	C-4
* R1032	C-3
* R1033	C-2
* R1034	C-3
* R1035	C-4
* R1036	C-4
* R1038	C-2
* R1039	C-4
* R1040	C-3
* R1041	C-2
* R1042	C-2
* R1043	C-4
* R1044	C-4
* R1046	C-4
* R1047	C-2
* R1049	C-4
* R1050	C-4
* R1052	C-4
* R1054	C-4
* R1060	E-3
* R1064	C-2
* R1068	D-3
* R1069	D-4
* R1072	F-3
* R1073	C-2
* R1075	B-3
* R1076	C-4
R1081	F-2
R1082	F-2
R1084	F-2
R1085	F-1
R1086	E-2
R1087	E-2
R1088	E-2
R1089	E-2
R1090	E-2
R1092	E-2
* R1093	B-3
R1096	E-2
* R1097	C-2
* R1098	D-2
* R1099	D-2
* R1100	D-2
* R1101	D-3
* R1102	D-4
* R1103	D-4
* R1104	D-4
* R1105	B-2
* R1107	B-2
* R1108	B-2
* R1109	B-2
* R1110	B-2
* R1111	B-2
* R1112	B-2
* R1113	B-2
* R1114	B-2
* R1205	C-6
* R1207	D-6
* R1208	D-7
* R1210	D-7
* R1211	C-6
* R1212	E-8
* R1214	C-6
* R1215	C-7
* R1218	C-7
* R1219	C-7
* R1221	D-7
* R1223	D-6
* R1224	D-6
* R1225	D-7
* R1226	E-6
* R1227	D-6
* R1229	D-7
* R1230	D-6
* R1231	D-7
* R1232	D-7
* R1233	D-6
* R1234	C-7
* R1235	D-6
* R1236	C-7
* R1241	D-6
* R1242	D-6
* R1255	D-5
* R1256	D-5
* R1262	F-6
* R1273	D-7
* R1274	D-7
* R1283	D-7
* R1284	D-7
* R1285	D-7
* R1286	D-5
* R1291	F-7
* R1292	F-7
* R1293	E-6
* R1294	D-6
* R1295	F-5
* R1296	E-6
* R1297	E-7
* R1298	E-8
* R1302	E-5
* R1307	D-7
R1402	D-12
R1403	D-12
R1404	D-11
R1405	D-11
R1407	C-12
R1408	C-11
R1409	C-12
R1411	C-12
R1412	C-11
R1413	C-10
R1414	C-10
R1415	B-10
R1416	B-10
R1417	C-12
R1418	B-10
R1419	B-11
R1420	B-11
R1421	B-11
R1422	B-12
R1423	C-12
R1424	C-12
R1425	C-12
R1426	C-11
R1427	C-11
R1428	C-11
R1429	C-11
R1430	C-11
R1431	C-11
R1432	C-11
R1433	C-11
R1434	C-11
R1435	C-11
* R1436	B-11
* R1437	B-11
R1438	D-11
R1439	D-11
R1440	C-11
* R1443	B-12
* R1447	B-11
* R1450	B-12
* R1451	B-11
* R1453	B-12
R1454	B-11
* R1455	B-12
* R1457	B-11
* R1458	B-12
* R1459	B-12
* R1460	B-12
* R1461	B-12
* R1462	B-12
* R1468	B-12
* R1471	B-11
* R1476	B-12
* R1478	D-10
* R1479	F-9
R1480	D-12
R1481	D-12
* R1493	D-9
* R1500	D-12
* R1501	D-12
* R1502	D-12
* R1503	D-12
* R1504	D-12
* R1505	D-13
* R1506	D-13
* R1507	D-13
* R1508	D-13
* R1509	D-13
* R1510	D-13
* R1511	E-13
* R1512	E-13
* R1513	E-13
* R1514	F-12
* R1515	F-12
* R1516	E-13
* R1517	E-12
* R1518	E-12
* R1519	D-12
* R1520	C-11
* R1521	C-10
* R1522	C-10
* R1525	C-11
* R1526	D-10
* R1527	C-12
* R1530	C-10
* R1532	D-9
* R1558	B-12
* R1801	H-6
* R1802	G-7
* R1803	G-6
* R1804	H-7
R1806	G-8
* R1807	G-7
R1808	H-7
R1809	H-7
R1810	H-7
R1811	H-7
R1812	G-7
R1813	H-7
R1814	G-7
R1815	H-8
R1817	G-7
R1818	G-7
R1819	G-7
R1820	G-7
* R1821	G-7
R1822	G-8
R1823	G-7
R1824	G-8
R1831	G-8
* R1835	H-8
* R1836	H-8
* R1838	G-7
R1871	I-8
R1873	H-8
R1874	H-8
R1875	H-7
R1876	H-7
R1878	I-7
R1881	H-8
R1882	G-8
R1884	H-7
R1885	H-8
R1887	H-9
R1888	I-7
R1890	I-7
R1891	H-8
R1893	H-9
R1894	K-8
R1895	K-8
R2001	G-8
R2002	G-8
R2003	F-8
R2004	F-8
R2005	G-8
R2006	G-8
R2007	F-7
R2008	F-7
R2009	G-8
R2010	G-7
R2013	F-7
R2014	F-7
R2015	F-7
R2016	F-7
R2017	F-7
R2018	F-7
R2035	I-13
R2036	J-13
R2037	J-13
* R2201	F-6
R2202	G-6
R2205	G-6
R2206	G-6
R2207	F-6
R2208	G-6
R2209	G-6
R2210	G-6
R2211	G-6
R2212	G-6
R2213	F-6
R2214	G-6
R2215	G-6
R2216	G-6
R2217	G-6
R2218	G-6
R2219	G-6
R2220	G-6
R2221	G-6
R2222	F-6
R2223	G-6
R2224	G-5
R2225	G-5
R2226	F-6
R2227	G-6
R2228	G-6
R2229	F-6
R2230	F-5
R2231	F-6
R2237	G-5
R2238	G-5
R2239	G-5
* R2241	F-6
R2242	F-6
* R2243	G-6
R2244	G-6
R2246	F-5
R2248	G-6
R2501	E-5
R2601	C-6
R2801	F-4
R2803	E-3
R2804	F-3
R2805	F-3
R2806	E-3
R2807	F-4
R2808	E-4
R2809	E-4
R2812	E-4
R2813	F-5
R3001	F-8
R3002	E-9
R3003	F-9
R3004	E-9
R3005	E-8
R3006	E-9
R3007	E-9
R3008	E-9
R3013	F-9
R3015	E-9
R3018	E-8
R3019	F-10
R3020	F-9
R3021	F-8
R3022	F-8
R3023	G-9
R3201	B-5
R3202	B-5
R3203	B-5
R3204	B-5
R3205	B-5
R3206	B-5
R3207	B-5
R3208	B-4
R3209	B-5
R3210	B-4
R3211	B-5
R3212	B-5
R3213	B-5
R3214	B-5
R3215	B-5
R3216	B-4
R3217	B-4
R3218	B-4
R3219	C-4
R3220	B-4
R3221	C-4
R3222	C-5
R3223	C-4
R3224	C-4
R3225	C-4
R3226	C-4
* R3600	L-11
* R3601	L-11
* R3602	L-11
* R3603	J-12
* R3604	J-12
* R3605	J-12
* R3606	J-12
* R3607	J-11
* R3608	I-11
* R3609	J-10
* R3610	J-10
* R3611	J-10
* R3612	J-11
* R3613	J-11
* R3614	J-11
* R3615	J-11
* R3616	J-11
* R3618	K-12
* R3619	K-12
* R3620	L-12
* R3621	J-12
* R3622	J-12
* R3623	J-12
* R3624	K-12
* R3625	J-12
* R3626	J-12
* R3627	J-11
* R3628	J-11
* R3629	K-11
* R3630	K-11
* R3631	K-11
* R3632	K-11
* R3633	K-11
* R3634	K-11
* R3635	L-11

4-3. PRINTED WIRING BOARDS

no mark : side A
* mark : side B

MD-76 BOARD

* R3636	K-11
* R3637	J-11
* R3638	K-11
* R3639	K-11
* R3640	K-11
* R3641	K-10
* R3642	K-10
* R3643	K-10
* R3648	K-10
* R3649	K-11
* R3650	K-10
* R3651	K-11
* R3652	L-10
* R3653	K-11
* R3654	L-10
* R3655	L-11
* R3656	L-11
* R3657	L-10
* R3658	L-9
* R3659	L-9
* R3662	L-11
* R3663	L-11
* R3665	L-11
R3666	B-2
R3671	B-1
* R3674	L-11
R3683	B-1
R3684	B-1
R3685	C-2
R3686	B-1
R3687	C-2
R3688	C-2
R3689	C-1
R3690	C-1
R3691	C-2
R3692	C-2
R3693	C-1
R3694	C-1
* R3699	J-11
* R3700	J-11
* R3701	J-11
* R3702	J-10
* R3703	J-10
* R3704	J-10
* R3705	J-10
* R3706	J-10
* R3707	L-12
R3709	I-1
R4001	H-4
R4002	H-5
R4003	H-5
R4004	H-5
R4005	H-5
R4006	H-4
R4011	H-4
R4012	H-4
R4013	H-3
R4014	H-3
R4015	H-3
R4016	H-3
R4017	I-3
R4018	H-3
R4019	H-3
R4020	I-3
R4022	H-3
R4023	H-3
R4024	H-3
R4025	H-3
R4026	I-3
R4027	H-3
R4028	H-3
R4029	I-3
R4031	I-4
R4033	B-12
R4035	J-5
R4037	I-4
R4041	J-4
R4042	J-4
R4043	I-4
R4044	J-4
R4045	I-4
R4065	J-5
R4066	J-5
R4067	J-5
R4068	J-5
R4069	J-5
R4070	I-5
R4071	J-5
R4072	J-5
R4073	J-5
R4074	K-5
R4075	J-5
R4076	J-5
R4077	J-5
R4078	J-5
R4079	J-5
R4080	J-5
R4081	J-5
R4082	J-5
R4083	J-5
R4086	J-4
R4087	B-12
R4090	J-4
R4091	J-4
R4092	J-4
R4093	I-3
R4094	I-3
R4095	I-3
R4096	H-5
R4097	I-4
R4098	I-4
R4099	I-4
R4104	H-5
R4105	H-4
R4109	J-5
R4112	J-5
R4113	I-4
R4201	J-7
R4202	I-5
R4219	I-6
R4246	J-7
R4247	J-7
R4248	K-7
R4537	G-3
R4540	G-3
R4541	G-3
R4552	H-4
R4553	G-4
* R4584	G-4
* R4586	G-4
R4601	H-3
R4606	H-3
R4607	H-3
R4608	H-3
R4609	H-3
R4613	H-3
R4614	H-3
R4615	H-3
R4616	I-3
R4619	H-3
R4620	H-2
R4621	G-2
R4625	G-2
R4629	G-2
R4631	I-2
R4632	I-2
R4635	H-2
R4639	H-2
R4640	H-1
R4641	I-1
R4642	H-1
R4645	I-1
R4646	H-1
R4647	H-1
* R4648	F-12
* R4649	F-12
* R4650	F-12
* R4651	F-12
R4652	K-2
R4653	K-2
R4655	K-2
R4656	K-2
* R4657	F-11
R4658	K-2
R4659	K-2
R4660	K-2
R4661	K-2
* R4662	F-11
R4663	K-2
* R4664	F-11
R4665	J-1
R4666	K-1
R4667	K-1
R4668	J-2
R4676	I-1
R4681	H-3
R4687	H-3
* R4693	H-2
* R5006	A-8
* R5007	A-7
R5008	B-6
R5009	C-6
R5010	C-6
R5018	D-7
R5019	C-7
R5020	B-7
R5065	C-7
R5110	C-7
R5113	D-7
R5137	C-7
R5140	C-7
R5151	C-7
R5154	C-7
R5159	B-7
R5160	C-7
R5163	C-7
R5164	C-7
R5167	C-7
R5239	B-7
R5240	C-7
R5242	C-7
R5243	C-8
R5244	C-8
R5245	B-8
R5248	B-7
R5249	B-7
R5254	C-8
R5255	C-8
R5256	C-8
R5257	C-6
R5401	G-10
* R5402	E-11
R5403	G-10
R5404	G-10
R5405	E-12
R5406	E-12
R5407	E-12
R5408	E-12
* R5409	E-11
R5411	F-12
R5414	G-10
R5415	E-12
R5416	E-12
* R5417	E-11
R5418	H-11
R5419	H-11
R5420	H-11
R5421	G-11
R5422	H-11
R5423	H-11
R5426	E-11
R5427	F-12
R5428	F-12
R5429	F-12
R5433	C-8
R5436	C-8
R5438	C-8
* R5440	F-10
R5442	C-8
R5444	C-9
R5446	B-9
R5447	E-11
R5448	E-12
R5449	C-9
* R5450	E-11
R5453	C-9
R5454	C-9
R5455	E-11
R5456	C-9
R5459	F-12
R5460	B-9
R5461	B-9
R5462	F-12
R5463	B-8
R5465	F-12
R5468	E-11
R5469	C-9
R5470	F-12
R5471	C-8
R5472	C-9
R5473	C-9
R5474	C-10
R5475	C-10
R5477	C-10
R5478	C-9
R5479	C-9
R5480	B-10
R5481	C-9
R5482	C-10
R5483	C-10
R5484	B-9
R5485	C-10
R5486	C-9
R5487	C-9
R5488	B-10
R5489	C-10
R5490	C-10
R5491	C-9
R5494	I-12
R5495	H-12
R5496	H-12
* R5505	E-11
* R5508	E-11
* R5510	E-11
R5511	C-8
R5800	I-11
R5801	I-11
R5802	H-11
R5804	I-11
R5805	I-11
R5806	H-10
R5807	I-10
R5808	H-11
R5809	I-10
R5810	H-11
R5826	J-10
R5832	J-11
R5836	J-9
R5837	I-10
R5838	I-10
R5839	I-10
R5840	H-10
R5846	H-9
R5847	I-9
R5848	I-9
R5852	H-9
* R5853	J-9
R5854	I-10
R5858	H-9
R5859	H-9
R5860	I-9
R5861	I-9
R5862	I-9
R5867	I-9
* R5871	J-9
* R5873	J-8
* R5874	J-8
* R5877	K-8
* R5879	J-8
* R5881	J-9
R5889	J-11
* R5893	L-9
* R5894	J-8
* R5895	J-9
* R5896	J-8
* R5897	J-9
* R5898	K-9
* R5899	K-8
* R5906	J-9
* R6003	H-13
* R6009	H-12
* R6010	I-12
* R6011	I-12
* R6012	I-12
* R6013	I-12
* R6014	I-12
* R6015	I-12
* R6016	I-12
* R6017	I-12
* R6018	I-12
* R6019	I-12
* R6020	I-12
* R6021	I-12
* R6022	I-12
* R6023	I-12
* R6024	G-13
* R6025	I-12
* R6026	I-12
* R6027	I-12
* R6028	I-12
* R6029	I-12
* R6030	G-13
* R6031	G-13
* R6032	H-12
* R6033	H-12
* R6034	H-12
* R6035	H-12
* R6036	H-12
* R6037	H-12
* R6038	H-12
* R6039	H-12
* R6040	H-12
* R6041	H-12
* R6042	H-12
* R6043	H-12
* R6044	H-12
* R6045	H-12
R6401	L-11
R6402	L-12
R6403	L-12
R6404	L-12
R6405	L-11
R6406	L-11
R6407	L-12
R6408	L-12
R6409	L-11
R6410	L-11
R6411	L-11
R6412	L-11
R6413	L-11
R6414	L-11
R6415	L-12
R6416	L-12
R6417	K-11
R6418	K-12
R6419	J-12
R6420	K-12
R6421	J-12
R6422	K-12
R6424	J-12
R6425	K-12
R6426	K-12
R6601	K-9
R6604	L-10
R6605	K-9
R6606	L-9
R6607	L-10
R6608	K-9
R6612	K-10
R6614	J-10
R6615	K-9
R6617	K-9
R6618	K-10
RB5000	C-7
RB5001	D-7
* S4602	L-5
* TP4001	H-4
X1871	I-8
X1872	I-7
X3201	B-4
X4601	I-2
X4602	H-1
X5000	B-6
X5820	J-10
X6401	K-11
C001	D-5
C002	E-6
CN001	K-1
CN002	I-1
CN003	C-11
D001	F-6
IC001	E-6
IC002	I-5
IC003	D-5
IC004	H-9
IC005	E-9
JR001	E-7
JR003	C-7
JR004	H-6
JR005	E-5
JR006	E-6
Q001	A-5
Q002	L-5
R001	B-12
R003	F-6
R004	E-6
R005	E-6
R006	E-6
R007	I-6
R008	E-6
R009	B-10
R010	D-6
R011	D-6
R012	D-6
R013	D-7
R014	J-7
R015	D-12
R028	I-6
R029	D-6
R030	F-6
R031	E-6
R032	B-9
R033	B-10
RV001	C-11
RV002	C-12
RV003	B-10
RV004	B-11
S001	B-9
S002	A-9
S003	A-8

4-3. PRINTED WIRING BOARDS

no mark : side A
* mark : side B

PD-287 BOARD

C6103	C-4
C6104	C-4
C6105	B-4
C6107	C-5
C6108	B-4
C6109	C-3
C6110	B-4
C6111	C-5
C6112	C-3
C6115	C-3
C6116	C-3
C6117	C-3
C6119	B-1
C6120	B-5
C6122	C-3
C6123	C-3
C6124	C-3
C6125	C-2
C6127	C-2
C6128	C-2
C6129	C-2
CN6101	C-4
CN6102	C-2
* D6105	B-6
* D6106	C-6
* D6107	A-6
D6109	C-2
FB6101	B-4
IC6101	C-5
IC6102	B-3
L6101	C-4
L6103	C-4
L6104	B-2
Q6104	B-5
Q6105	B-5
Q6106	B-5
Q6107	B-5
Q6108	C-2
Q6109	C-1
Q6110	C-2
R6101	A-1
R6104	B-4
R6105	C-4
R6106	B-4
R6109	C-3
R6110	C-5
R6111	C-5
R6112	B-5
R6113	B-5
R6114	B-5
R6115	C-3
R6116	B-4
R6117	B-5
R6118	B-5
R6119	B-5
R6121	C-1
R6122	B-5
R6123	C-2
R6124	C-1
R6126	C-2

FR-253 BOARD

C101	B-15
* C102	B-15
* C103	B-16
C104	B-2
* C106	E-12
* C107	D-12
* CN101	F-10
* D101	F-11
* D102	F-11
* D103	F-11
* D104	F-11
* D105	F-10
* D106	F-10
D107	B-2
D108	C-2
D109	B-1
D110	B-1
D111	B-15
D112	A-3
D113	A-1
D114	C-11
D115	C-9
D116	F-13
D117	C-9
D118	C-8
D119	F-15
D120	C-7
D121	F-16
D122	C-7
D123	D-15
D124	D-16
D125	D-14
D126	D-15
* D127	B-15
* D128	B-16
* D129	C-3
D130	C-10
* D133	E-10
* D134	E-8
* FB101	C-3
IC101	B-2
* IC102	D-12
Q101	B-3
Q102	A-2
Q103	A-2
* Q104	D-12
* Q105	D-12
* Q106	E-9
R101	A-16
R102	E-3
R104	C-1
R105	B-1
R106	D-16
R107	D-13
R108	D-3
R109	D-14
R110	D-14
R111	F-3
R113	C-1
R114	B-1
R115	D-4
R116	E-16
R117	D-14
R118	E-16
R119	D-13
R120	D-5
R121	F-3
R123	C-1
R124	B-1
R125	F-16
R126	F-13
R127	F-14
R128	D-12
R129	F-5
R130	A-3
R131	A-1
R132	A-1
* R134	B-15
* R136	A-2
* R137	B-16
* R139	B-16
* R140	B-16
* R142	D-12
* R143	D-12
* R144	D-12
* R145	D-12
R146	E-14
* R147	D-12
* R148	D-12
R149	E-15
* R150	E-12
R151	E-16
* R152	D-12
R153	D-14
R154	D-16
R155	D-14
R156	D-15
R161	A-2
R162	B-3
R163	A-2
R164	B-3
* R167	D-12
R168	D-4
R169	D-4
* R172	E-9
* R173	E-9
* R174	E-10
* R175	E-7
* RV101	C-15
* RV102	C-16
S101	E-3
S102	D-1
S103	C-1
S104	A-16
S105	D-3
S106	C-3
S107	D-13
S108	D-16
S109	D-14
S110	D-15
S111	E-13
S112	E-16
S113	D-13
S114	D-5
S115	F-16
S116	F-13
S117	D-13
S118	E-12
S119	E-5
S120	F-12
S121	E-15
S122	F-15
S123	A-15
S124	D-12
S125	F-5
S126	F-3
S127	A-1

JV-002 BOARD

* C1002	D-2
* C1003	E-2
* C1004	D-2
* C1005	E-2
* C1006	E-3
* C1007	F-3
* C1008	C-3
* C1009	C-5
* C1010	C-4
CN1000	A-7
CN1001	A-5
CN1002	A-4
FB1000	B-4
FB1001	B-4
* FB1002	E-2
* FB1003	E-2
* IC1000	C-4
* J1000	D-2
* J1001	C-4
* J1002	C-6
* J1003	C-7
* R1000	D-2
* R1001	E-2
* R1002	D-2
* R1003	E-2
* R1004	D-2
* R1005	D-2
* R1006	F-2
* R1007	F-2
* R1008	E-3
* R1009	D-3
* R1010	F-3
* R1011	D-3
* R1012	E-3
* R1013	E-3
* R1014	D-3
* R1015	D-3
* R1016	C-5
* R1017	C-5
* R1018	C-3
* R1019	C-4
* R1020	C-3
* R1021	C-4
* R1022	C-3
* R1023	C-4
* R1024	C-3
* R1025	C-4
R1026	B-4
R1027	B-4
* S1000	E-4

JK-309 BOARD

C6000	F-7
C6001	F-7
C6002	E-7
C6003	G-8
C6004	E-8
C6005	G-8
C6006	E-8
C6007	G-8
C6008	E-9
C6009	F-9
C6010	F-9
C6011	E-9
C6012	F-9
C6013	F-9
C6014	G-9
C6015	F-9
C6016	G-9
C6034	G-7
CN721	D-1
CN741	B-10
CN742	B-1
CN6001	G-1
CN6002	F-10
D721	E-9
D722	C-10
D723	D-10
D741	B-9
FB721	E-9
FB722	E-9
FB723	C-9
FB724	C-9
FB725	D-9
FL6001	G-7
FL6002	E-9
FL6003	E-9
FL6004	G-9
IC6000	F-8
IC6001	G-9
J721	E-10
J722	C-10
LF6000	F-9
LF6001	F-9
LF6002	F-9
LF6003	F-9
Q6000	G-9
R701	D-9
R6000	E-9
R6001	E-9
R6002	E-8
R6003	G-9
R6004	E-9
R6005	G-9
R6006	G-9
R6007	F-9
R6008	G-9
R6009	G-9
R6010	F-9
R6011	F-9
R6012	F-9
R6013	F-9
R6014	F-9
R6015	F-9
R6016	F-9
R6017	F-9
R6018	G-9
R6019	G-9
R6020	G-10
R6021	G-10
R6022	G-10
R6029	F-2
R6030	E-2
R6031	E-2
R6032	E-2
R6033	F-2
R6034	F-7
R6035	F-7
R6036	F-7
R6037	F-7
R6038	F-7
R6039	F-7
R6040	F-7
R6041	F-7
R6042	F-7
R6043	F-7
R6044	F-7
R6045	F-7
R6046	G-7
R6047	G-8
R6048	G-8
R6049	G-8
R6050	G-8
R6051	G-8
R6052	G-8
R6053	G-8
R6054	G-8
R6055	E-7
R6056	E-7
R6057	E-7
R6058	E-7
R6059	E-7
R6060	E-7
R6061	E-7
R6062	E-7
R6063	E-7
R6064	E-7
R6065	E-7
R6066	E-7
R6067	F-7
R6068	F-7
R6069	F-7
RB001	B-10
S721	D-10
TH741	B-9
TH742	A-9
TH743	B-9
TH744	B-9

4-3. PRINTED WIRING BOARDS

no mark : side A
* mark : side B

HP-141 BOARD

* C2000	B-1
C2001	B-1
C2002	B-2
C2003	B-1
C2004	B-1
C2005	A-1
C2006	B-2
C2007	B-2
* CN2000	B-1
* D2000	B-3
* D2001	B-3
FB2000	B-3
FB2001	B-3
IC2000	B-1
* J2000	B-3
Q2000	B-1
Q2001	B-1
Q2002	B-2
Q2003	B-2
R2000	B-2
R2001	B-2
R2002	B-1
R2003	B-1
R2004	B-1
R2005	B-1
R2006	B-1
R2007	B-1
R2008	B-2
R2009	B-2
R2010	B-2
R2011	B-2
R2012	B-2
R2013	B-2
R2014	B-2
R2017	B-2
R2018	B-2
R2019	B-2
R2020	B-2
* RV2000	A-3

ACS1581-MA BOARD

CN101	A-5
CN201	A-2
D101	C-6
D102	B-4
D103	B-4
D104	C-3
D105	B-3
D106	B-4
D201	B-2
D203	C-2
IC101	B-4
IC102	A-3
IC201	C-1
Q101	C-4
Q201	C-2

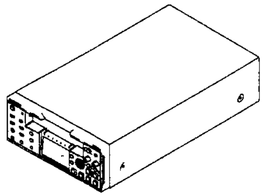
NOTE

5. REPAIR PARTS LIST

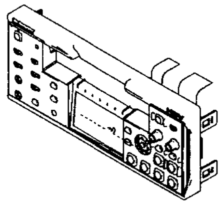
NOTE: Characters **A** to **Z** of the electrical parts list indicate location of exploded views in which the desired part is shown.

Link

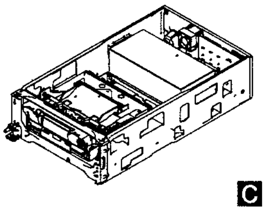
EXPLODED VIEWS


A

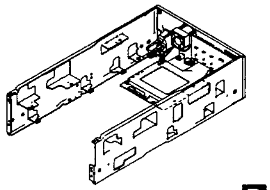
OVERALL ASSEMBLY


B

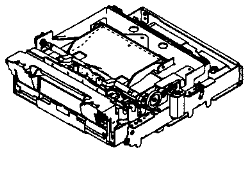
FRONT PANEL BLOCK


C

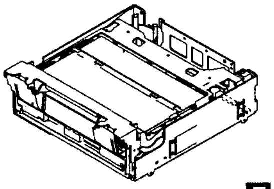
CHASSIS BLOCK


D

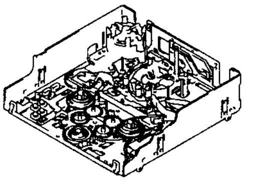
REAR PANEL BLOCK


E

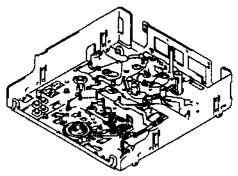
CMX BLOCK


F

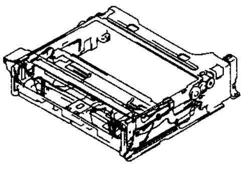
MECHANISM DECK ASSEMBLY-1


G

MECHANISM DECK ASSEMBLY-2


H

MECHANISM DECK ASSEMBLY-3


I

MECHANISM DECK ASSEMBLY-4

Link

ELECTRICAL PARTS LIST

ACCESSORIES

FP-104 FLEXIBLE BOARD F	JK-309 BOARD D	POWER BLOCK (ACS1581-MA BOARD) C
FP-248 FLEXIBLE BOARD H	JV-002 BOARD D	RP-243 BOARD E
FR-253 BOARD B	MD-76 BOARD H	SH-023 BOARD E
HP-141 BOARD C	PD-287 BOARD B	VD-036 BOARD E

5. REPAIR PARTS LIST

(ENGLISH)

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- CAPACITORS:
  uF: μF
- COILS
  uH: μH
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA... , uPA... , μPA... ,
  uPB... , μPB... , uPC... , μPC... ,
  uPD..., μPD...

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

- Color Indication of Appearance Parts
  Example:
  (SILVER) : Cabinet's Color
  (Silver) : Parts Color

(JAPANESE)

【使用上の注意】

- ここに記載されている部品は，補修用部品であるため，回路図及びセットに付いている部品と異なる場合があります。
- −XX, −Xは標準化部品のため，セットに付いている部品と異なる場合があります。
- *印の部品は常備在庫しておりません。
- コンデンサの単位でuFはμFを示します。
- 抵抗の単位Ωは省略してあります。
  金　　被：金属被膜抵抗。
  サンキン：酸化金属被膜抵抗。
- インダクタの単位でuHはμHを示します。
- 半導体の名称でuA..., uPA..., uPB..., uPC..., uPD...等はそれぞれμA..., μPA..., μPB..., μPC..., μPD...を示します。

お願い
図面番号で部品を指定するときは基板名又はブロックを併せて指定してください。

⚠印の部品，または⚠印付の点線で囲まれた部品は，安全性を維持するために，重要な部品です。
従って交換時は，必ず指定の部品を使用してください。

- 外装部品色表示
  例：
  (SILVER):セットの色を表す。
  (Silver)　:部品の色を表す。

- Abbreviation
  AR : Argentine model
  AUS : Australian model
  BR : Brazilian model
  CH : Chinese model
  CND : Canadian model
  EE : East European model
  HK : Hong Kong model
  J : Japanese model
  JE : Tourist model
  KR : Korea model
  NE : North European model

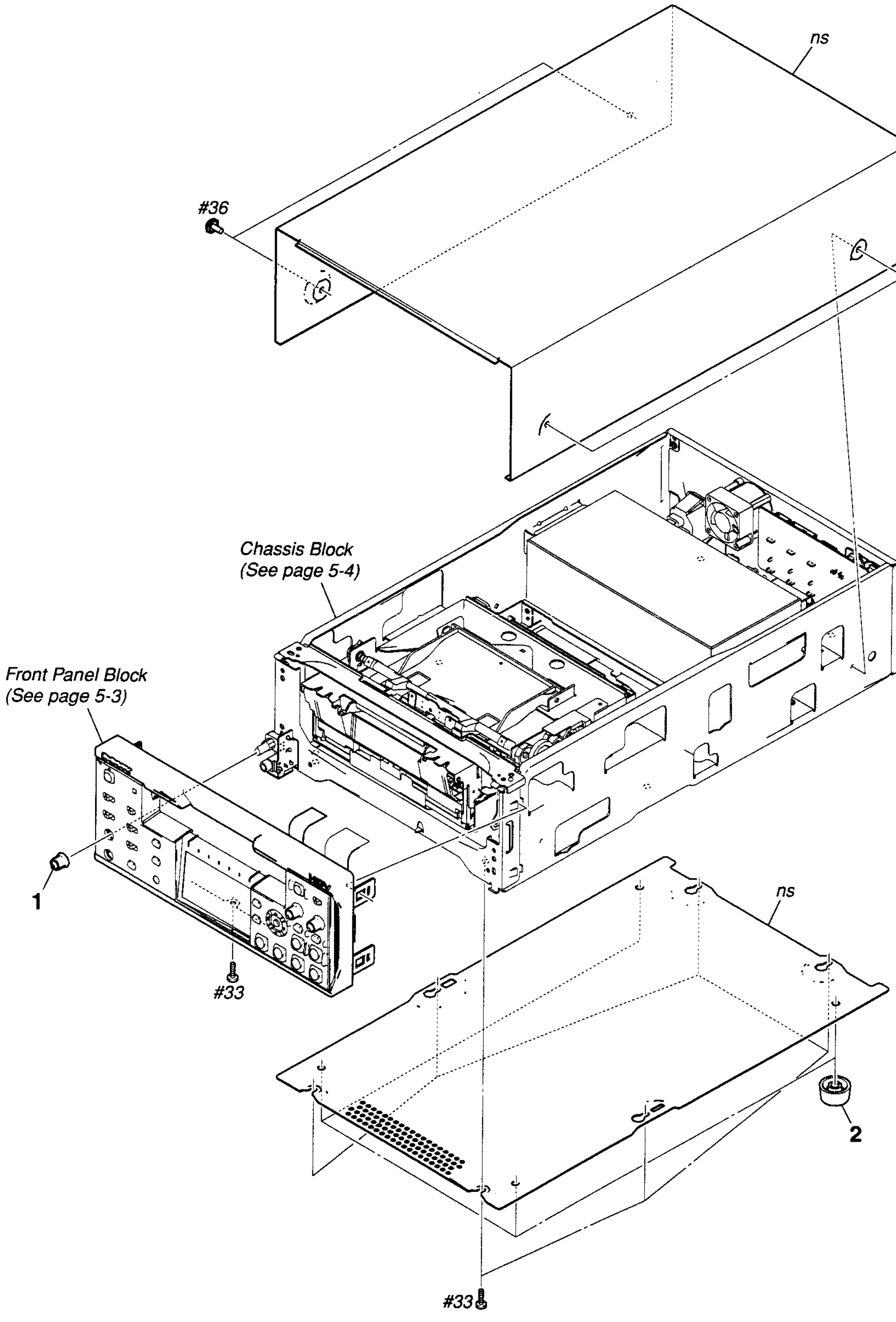
5. REPAIR PARTS LIST

DISASSEMBLY HARDWARE LIST

5-1. EXPLODED VIEWS

5-1-1. OVERALL ASSEMBLY

ns: not supplied


ns
#36
#36
Chassis Block
(See page 5-4)
Front Panel Block
(See page 5-3)
1
#33
ns
2
#33

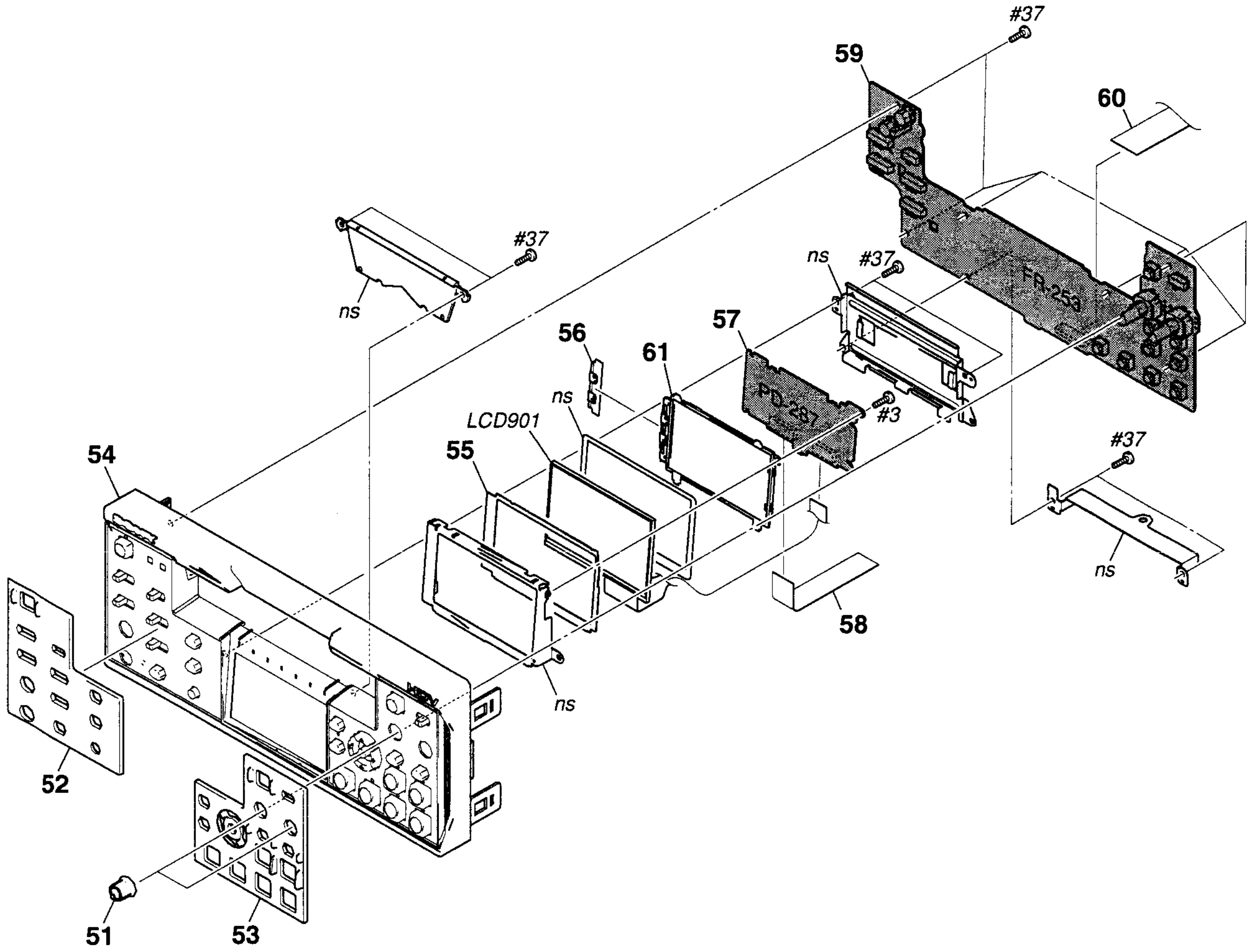
Ref. No.	Part No.	Description
1	2-660-352-01	KNOB, VOL
2	3-987-171-01	FOOT (FF-004)

Ref. No.	Part No.	Description
#33	3-077-331-21	+BV3 (3-CR) (Silver)
#36	4-886-821-11	SCREW, M3 CASE (Silver)

DISASSEMBLY HARDWARE LIST

5-1-2. FRONT PANEL BLOCK

ns: not supplied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#37
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#37
FR-253
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61
57
PD-287
#3
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LCD901
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#37
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53

Ref. No.	Part No.	Description
51	2-660-352-01	KNOB, VOL
52	2-673-187-01	PLATE (L), ORNAMENTAL
53	2-673-188-01	PLATE (R), ORNAMENTAL
54	X-2103-340-1	PANEL ASSY, FRONT
55	2-659-717-01	CUSHION, PANEL
* 56	2-638-780-01	CLIP
57	A-1166-868-A	PD-287 BOARD, COMPLETE
58	1-832-964-11	CABLE, FLEXIBLE FLAT (FPD-001)
59	A-1166-869-A	FR-253 BOARD, COMPLETE
60	1-832-959-11	CABLE, FLEXIBLE FLAT (FFR-001)
61	A-1153-648-A	BLOCK (2.7), LIGHT GUIDE PLATE
LCD901	8-753-256-21	ACX547AK-1
#3	2-660-401-01	SCREW (M1.7), NEW TRU-STAR, P2 (Red)
#37	3-080-206-31	SCREW, TAPPING, P2 (Black)

5-1-3. CHASSIS BLOCK

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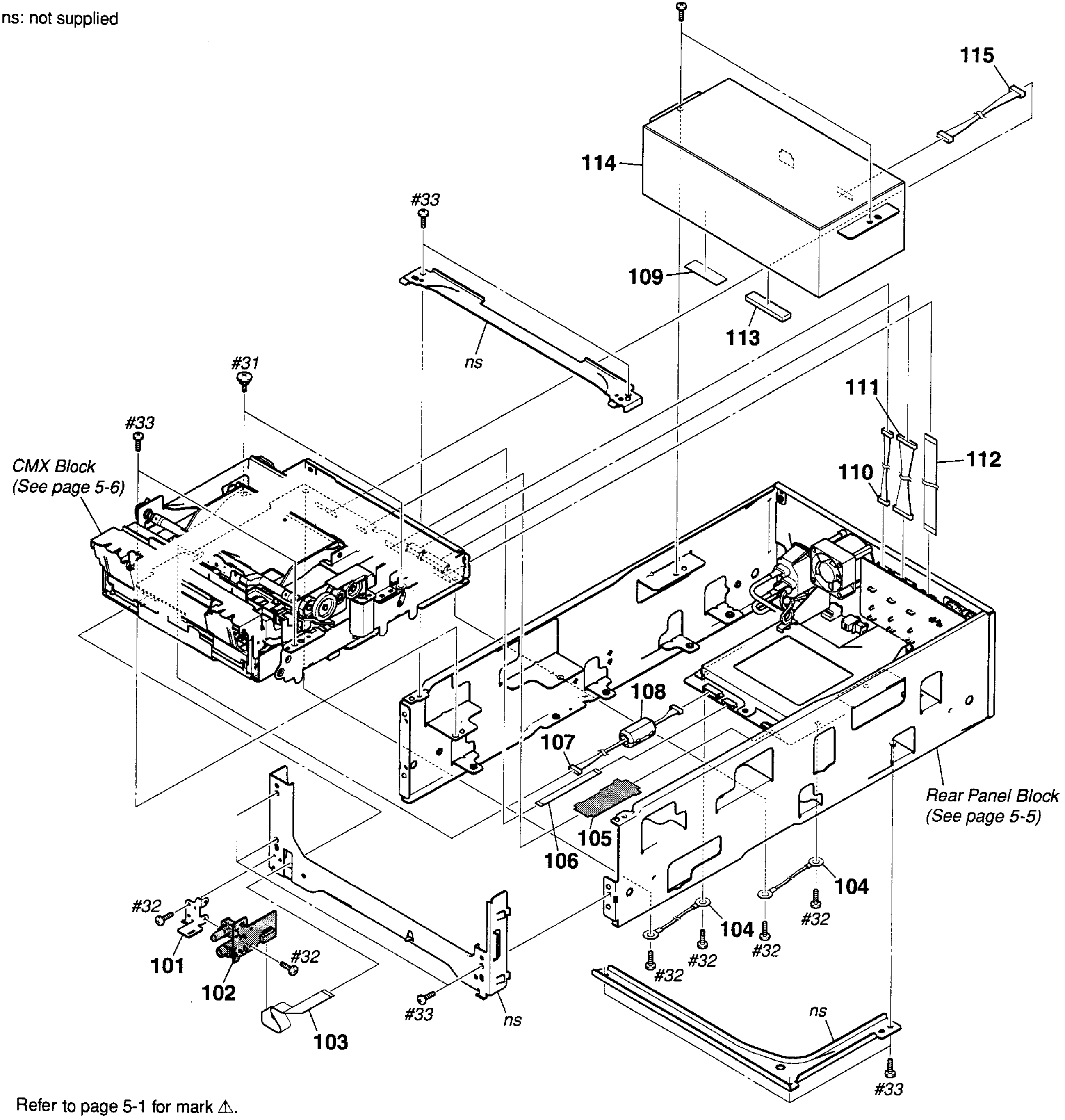
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#33
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113
ns
#31
111
#33
110
112
CMX Block
(See page 5-6)
108
107
Rear Panel Block
(See page 5-5)
105
106
104
#32
104
#32
#32
#32
#32
101
102
#32
103
#33
ns
ns
#33

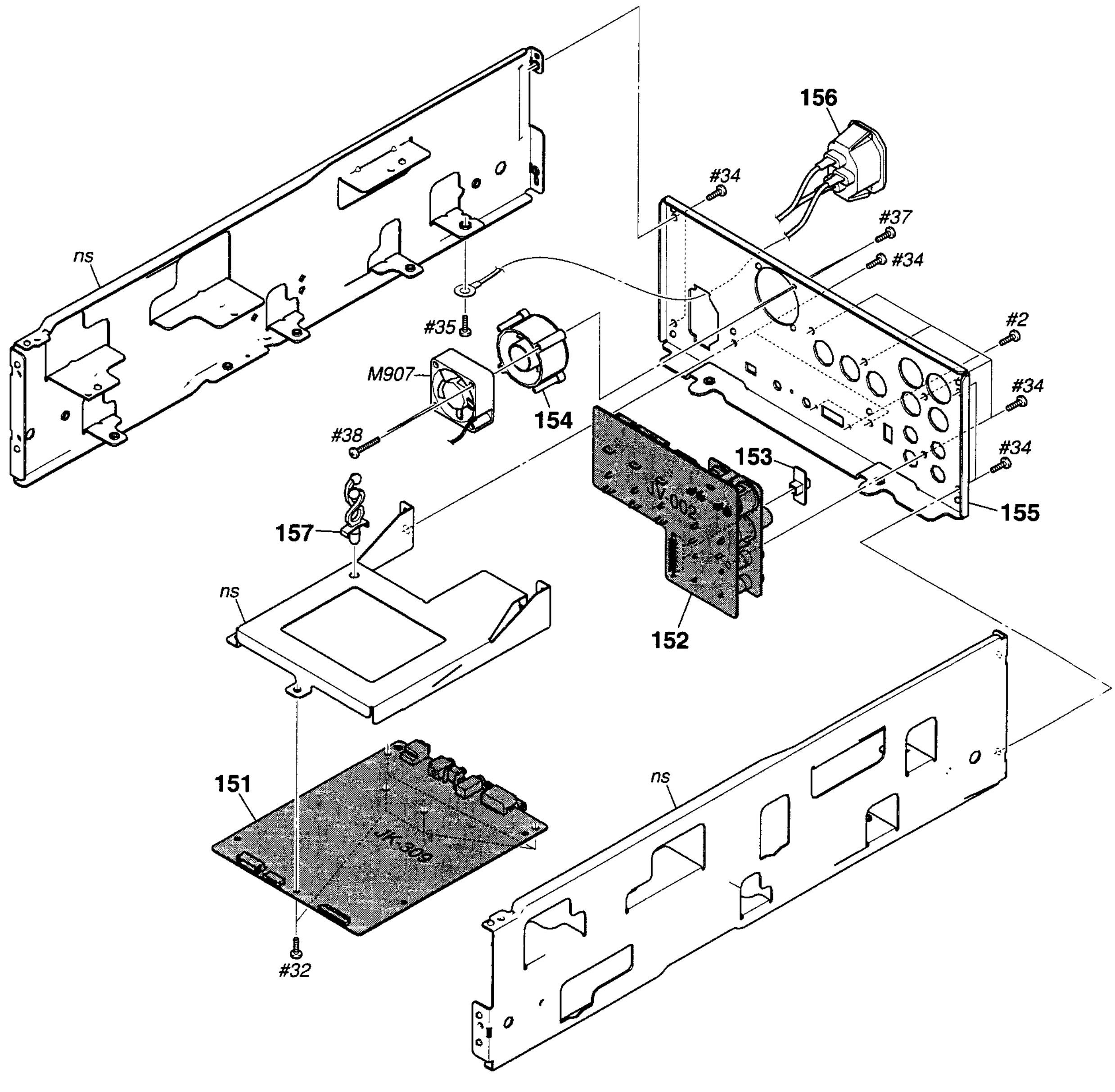
- Refer to page 5-1 for mark ⚠.

Ref. No.	Part No.	Description
101	3-072-975-01	HP BRACKET
102	A-1166-870-A	HP-141 BOARD, COMPLETE
103	1-832-960-11	CABLE, FLEXIBLE FLAT (FHP-002)
104	1-964-845-11	HARNESS (LG-052)
105	1-870-263-11	FP-506 FLEXIBLE BOARD
106	1-832-962-11	CABLE, FLEXIBLE FLAT (FJK-001)
107	1-964-812-11	HARNESS (DV-068)
108	1-543-793-11	FILTER, CLAMP (FERRITE CORE)
109	3-941-343-01	TAPE (A)
110	1-964-811-11	HARNESS (CP-097)

Ref. No.	Part No.	Description
111	1-964-810-11	HARNESS (SV-001)
112	1-832-961-11	CABLE, FLEXIBLE FLAT (FJV-002)
113	2-583-498-01	CUSHION (VC (FRONT))
⚠114	1-468-666-12	POWER BLOCK
115	1-964-814-11	HARNESS (PW-066)
#31	2-102-434-01	SCREW (M3 (ECO)), STEP (Silver)
#32	2-102-498-01	SCREW (2 (G TO)) (ECO) (Silver)
#33	3-077-331-21	+BV3 (3-CR) (Silver)

5-1-4. REAR PANEL BLOCK

ns: not supplied


156
#34
#37
#34
ns
#2
#35
M907
154
#34
#38
153
#34
155
157
JV-002
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152
151
ns
JK-309
#32

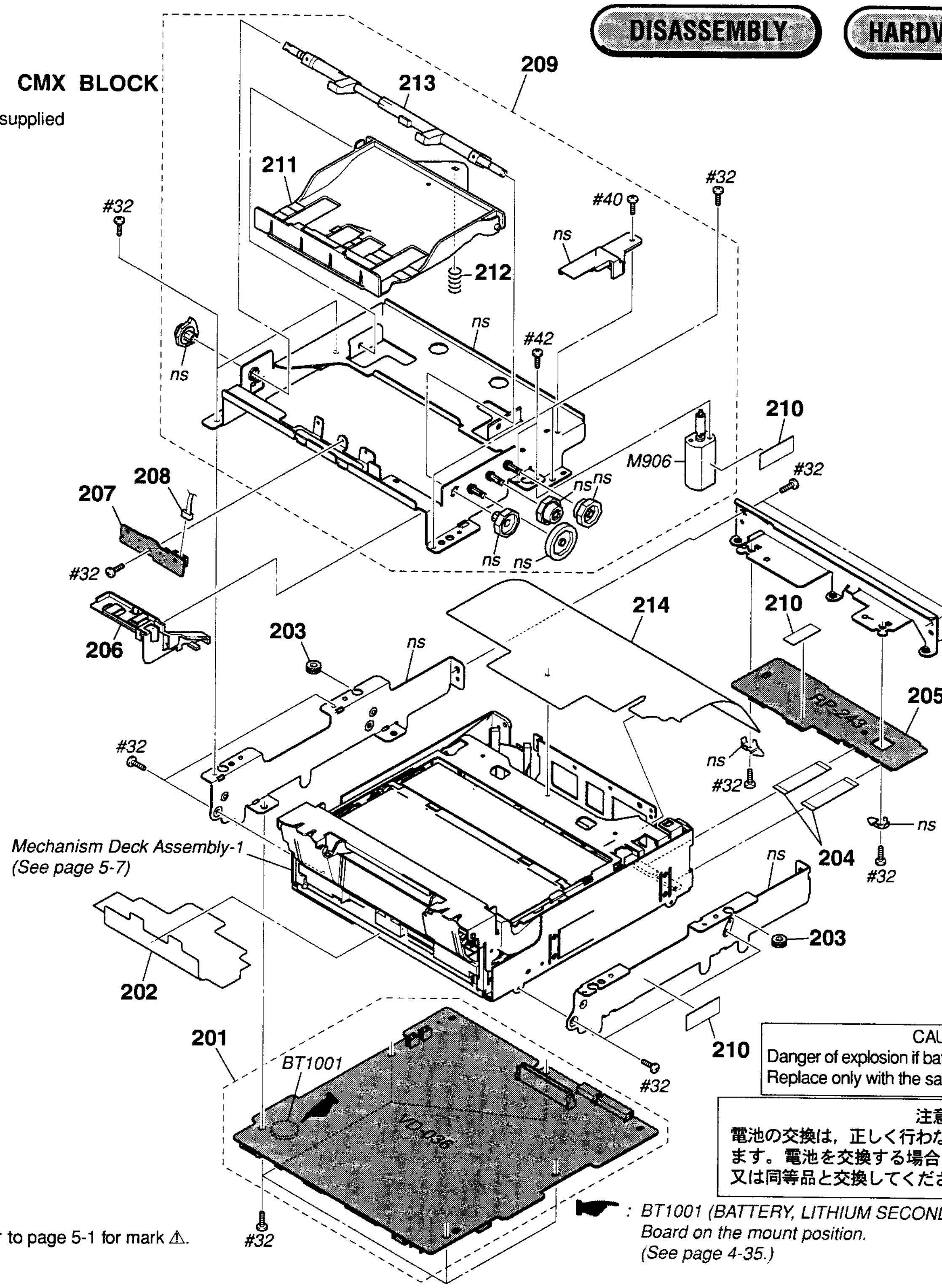
Ref. No.	Part No.	Description
151	A-1179-542-A	JK-309 BOARD, COMPLETE (SERVICE)
152	A-1166-865-A	JV-002 BOARD, COMPLETE
* 153	3-063-337-01	SWITCH, SLIDE
154	2-676-029-01	HOLDER, FAN
155	2-660-355-01	PANEL, REAR
156	1-961-664-11	HARNESS (AC-249)
157	3-175-037-01	PURSE LOCK
M907	1-787-505-11	MOTOR, FAN

Ref. No.	Part No.	Description
#2	2-635-562-31	SCREW (M1.7) (Black)
#32	2-102-498-01	SCREW (2 (G TO)) (ECO) (Silver)
#34	3-077-331-41	+BV3 (3-CR) (Black)
#35	3-975-291-02	SCREW (4X6) (Silver)
#37	3-080-206-31	SCREW, TAPPING, P2 (Black)
#38	7-685-651-79	SCREW, TAPPING, +BV 3X20, TYPE 2, IT-3 (Silver)

DISASSEMBLY HARDWARE LIST

5-1-5. CMX BLOCK

ns: not supplied



Mechanism Deck Assembly-1
(See page 5-7)

CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

注意
電池の交換は，正しく行わないと破裂する恐れがあります。電池を交換する場合には必ず同じ型名の電池又は同等品と交換してください。

: BT1001 (BATTERY, LITHIUM SECONDARY)
Board on the mount position.
(See page 4-35.)

- Refer to page 5-1 for mark ⚠.

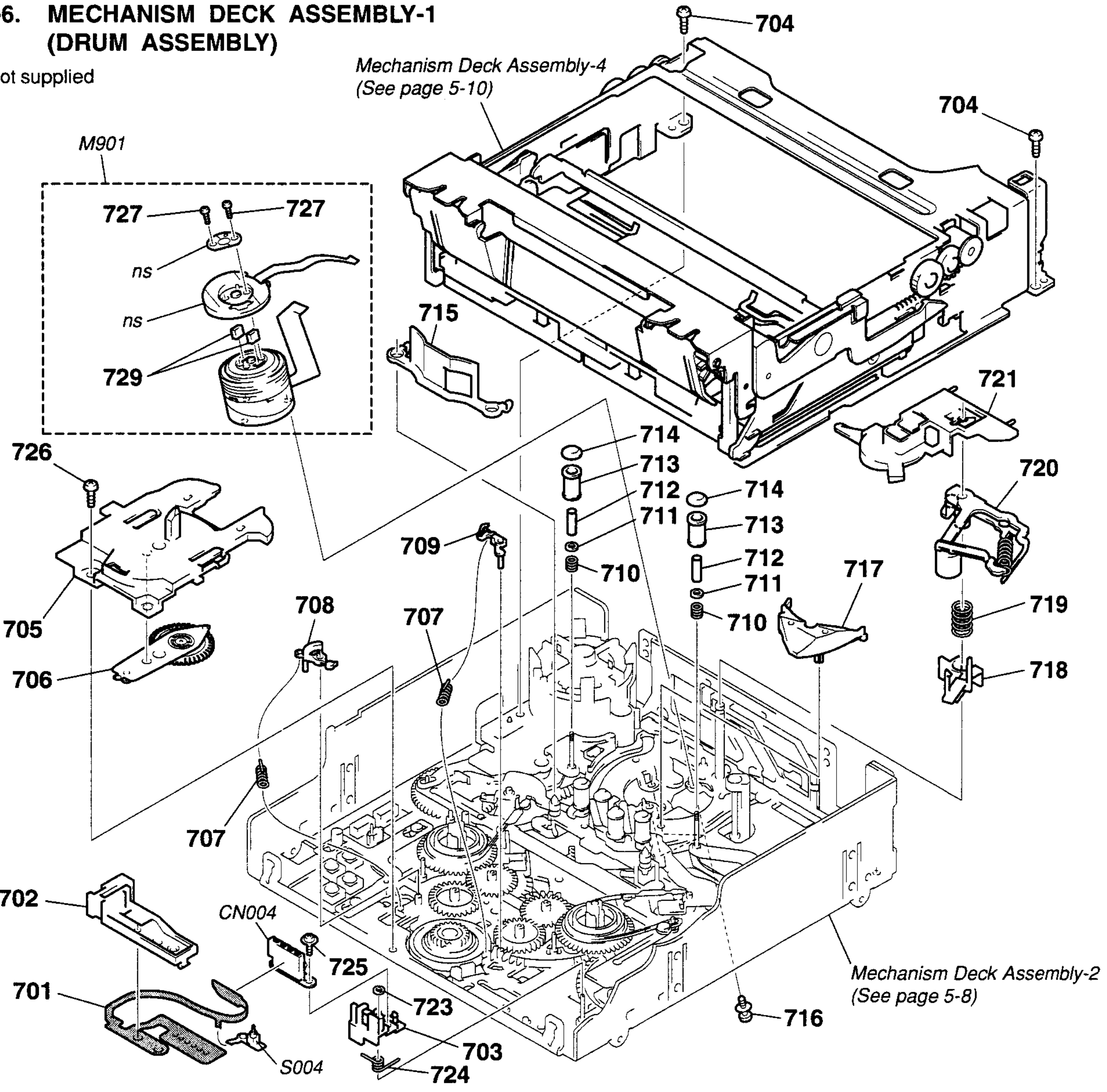
Ref. No.	Part No.	Description
201	A-1166-873-A	VD-036 BOARD, COMPLETE (SERVICE)
202	2-679-684-01	SHEET MD
203	3-974-011-01	RUBBER, VIBRATION PROOF
204	1-832-958-11	CABLE, FLEXIBLE FLAT (FRP-001)
205	A-1166-862-A	RP-243 BOARD, COMPLETE
206	3-057-667-01	HOLDER, HARNESS
207	A-1166-871-A	SH-023 BOARD, COMPLETE
208	1-964-809-11	HARNESS (SC-118)
209	A-1166-872-A	CK BLOCK ASSY
210	3-941-343-01	TAPE (A)

Ref. No.	Part No.	Description
211	2-665-055-01	LEVER (4150), DETECTION
212	3-058-376-01	SPRING, COMPRESSION
213	X-3949-980-1	LEVER ASSY, CK
* 214	2-698-077-01	SHEET (DEW BARRIER)
⚠BT1001	1-756-128-11	BATTERY, LITHIUM (SECONDARY)
M906	X-3949-979-1	MOTOR (CK) ASSY
#32	2-102-498-01	SCREW (2 (G TO)) (ECO) (Silver)
#40	7-685-851-04	SCREW +BVTT 2X4 (S) (Silver)
#42	7-628-253-00	SCREW +PS 2X4 (Silver)

5. REPAIR PARTS LIST

5-1-6. MECHANISM DECK ASSEMBLY-1 (DRUM ASSEMBLY)

ns: not supplied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Mechanism Deck Assembly-4
(See page 5-10)
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CN004
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703
S004
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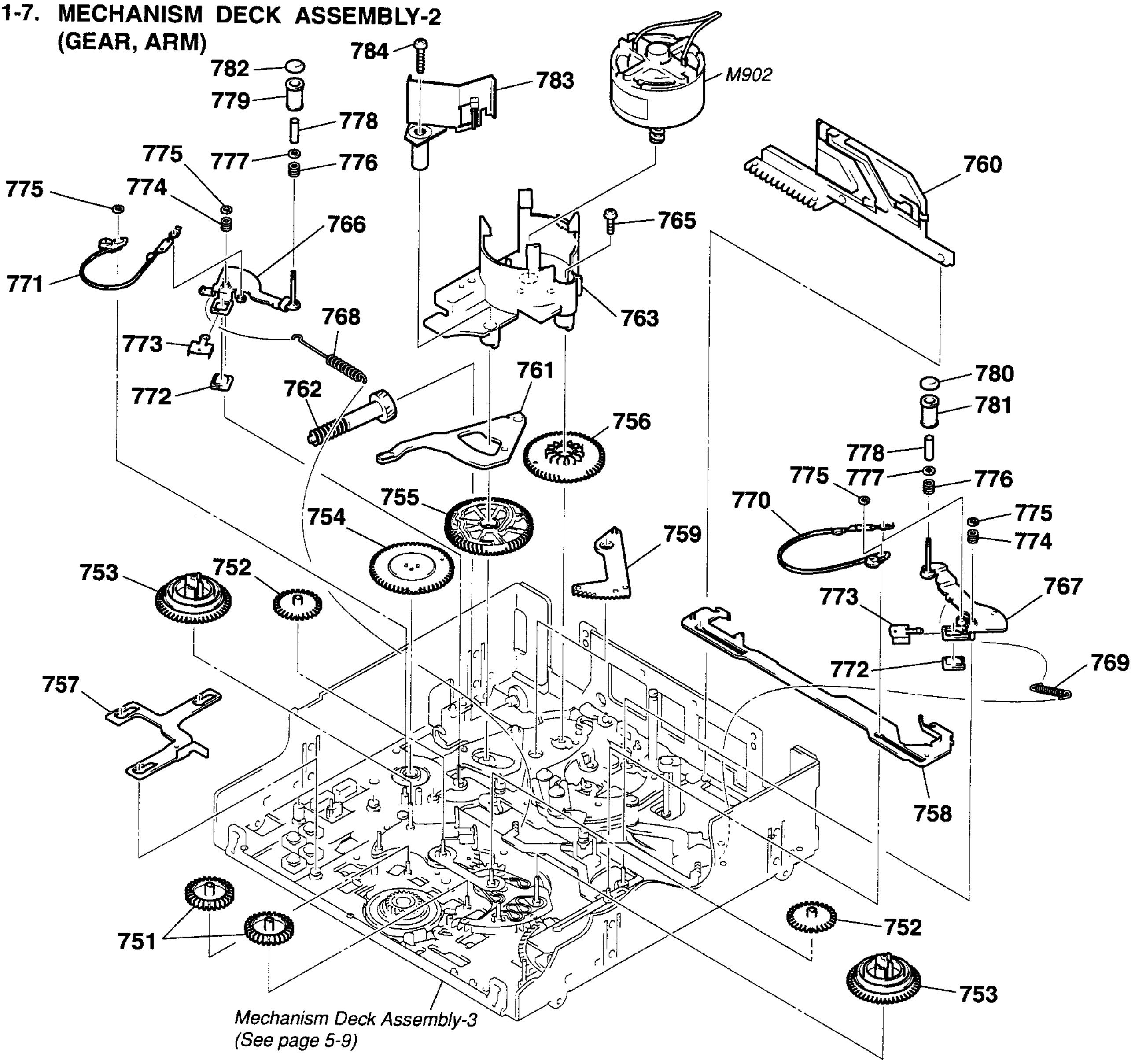
Mechanism Deck Assembly-2
(See page 5-8)

Ref. No.	Part No.	Description
701	1-675-561-11	FP-104 FLEXIBLE BOARD
* 702	3-057-351-01	GUIDE, MIC BASE
703	3-057-350-02	BASE, MIC
704	3-732-817-11	SCREW (2X4.5), TAPPING
705	3-057-319-05	RETAINER, PENDULUM
706	X-3949-922-1	ARM ASSY, PENDULUM
707	3-057-286-01	SPRING, EXTENSION (BRAKE)
708	3-057-280-01	ARM (S), BRAKE
709	3-057-279-01	BRAKE (T), RATCHET
710	3-057-232-01	SPRING, COMPRESSION (TG)
711	3-057-238-01	RING, TG
712	3-057-237-01	SLEEVE, TG
713	3-057-235-01	ROLLER, TG
714	3-057-234-01	FLANGE, TG UPPER
715	3-057-379-01	GUARD, GUIDE
716	A-7094-608-C	SCREW ASSY, DRUM FITTING
717	3-973-171-01	SUPPORT, TAPE
718	3-057-227-01	RETAINER, TAPE
719	3-973-818-01	SPRING, COMPRESSION (TAPE RETAINER)
720	X-3949-915-1	ARM ASSY, PINCH
721	3-057-228-01	CAP, DRUM
723	3-726-829-01	WASHER, STOPPER
724	3-057-353-01	SPRING, MIC BASE
725	3-318-201-91	SCREW (B) (1.4X3), TAPPING
726	3-973-266-11	SCREW (M2X2.2 (MEK)), HEAD
727	3-703-816-74	SCREW (M1.4X4.5)
729	1-770-363-11	CONNECTOR, ELASTIC
CN004	1-770-312-21	CONNECTOR 4P
M901	A-1193-393-A	DRUM ASSY (DEH-21D/J-RP)
S004	1-762-351-22	SWITCH, PUSH (1 KEY) (REC PROOF)

5-1-7. MECHANISM DECK ASSEMBLY-2 (GEAR, ARM)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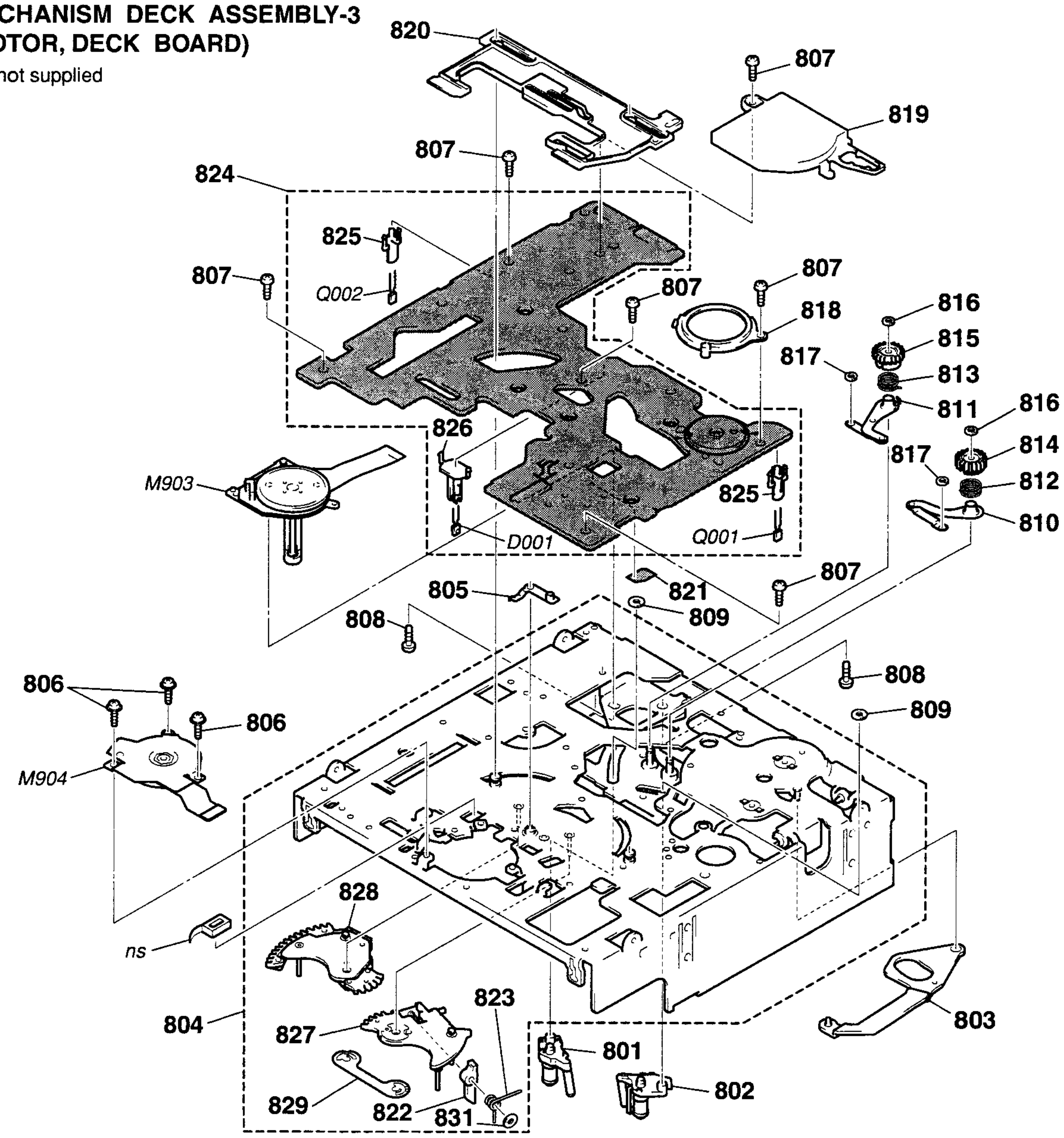
Mechanism Deck Assembly-3
(See page 5-9)

Ref. No.	Part No.	Description
751	A-7096-800-A	GEAR (A) ASSY, IDLER
752	3-057-311-01	GEAR (B), IDLER
753	A-7094-599-A	REEL (LARGE) BLOCK ASSY
754	3-057-267-01	GEAR, ENCODER
755	3-057-294-01	GEAR, MAIN CAM
756	3-973-140-01	GEAR, SUB CAM
* 757	3-057-302-01	SLIDER, SBR
758	3-057-314-02	SLIDER, SUB
759	X-3950-816-2	ARM ASSY, LOADING
760	3-057-221-01	SLIDER, PINCH
* 761	3-057-252-01	ARM, SUB SLIDER
762	3-973-159-01	GEAR, JOINT
763	3-057-222-02	HOLDER, MOTOR
765	3-973-266-11	SCREW (M2X2.2 (MEK)), HEAD
766	X-3949-918-1	ARM ASSY, TG2
767	X-3949-919-1	ARM ASSY, TG7
768	3-057-295-01	SPRING, EXTENSION (TG2)
769	3-057-296-02	SPRING, EXTENSION (TG7)
770	X-3949-921-1	BAND (TG7) ASSY
771	X-3949-920-1	BAND (TG2) ASSY
772	3-057-281-01	MAGNET, ET
773	3-057-336-01	HOLDER, MAGNET
774	3-057-344-01	SPRING, COMPRESSION (TG ARM)
775	3-726-829-01	WASHER, STOPPER
776	3-057-232-01	SPRING, COMPRESSION (TG)
777	3-057-238-01	RING, TG
778	3-057-237-01	SLEEVE, TG
779	3-057-235-01	ROLLER, TG
780	3-057-234-01	FLANGE, TG UPPER
781	3-057-337-01	ROLLER, TG7
782	3-063-887-01	FLANGE (2), TG UPPER
783	X-2148-017-1	TC ASSY
784	2-685-919-01	SCREW (M2X13)
M902	X-3946-702-1	MOTOR ASSY, CAM

5. REPAIR PARTS LIST

5-1-8. MECHANISM DECK ASSEMBLY-3
(MOTOR, DECK BOARD)

ns : not supplied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M903
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810
D001
Q001
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805
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M904
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ns
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801
802
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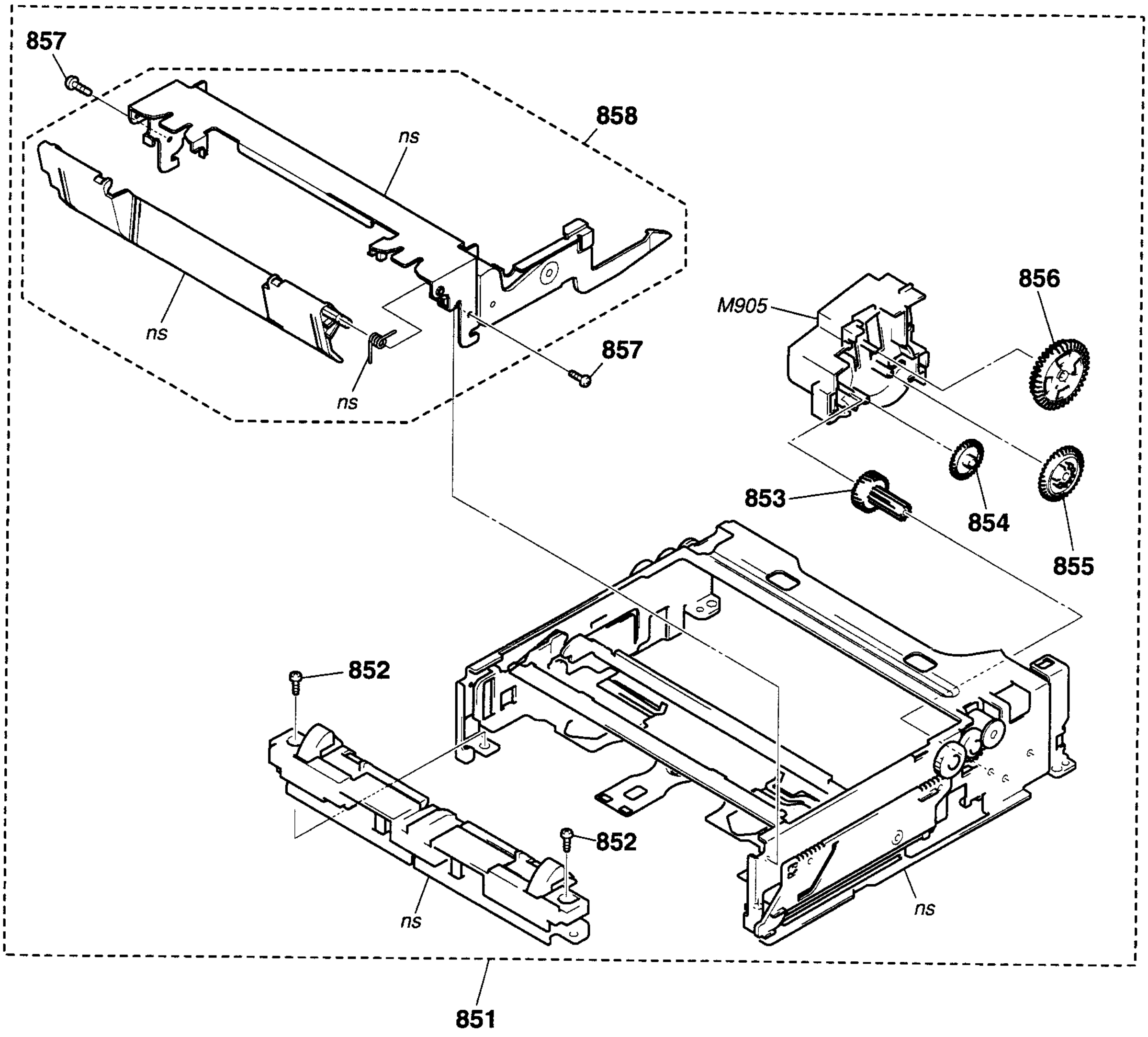
Ref. No.	Part No.	Description
801	A-7025-007-A	COASTER (T) BLOCK ASSY
802	A-7096-267-A	COASTER (S) BLOCK ASSY (R)
* 803	3-057-283-02	ARM, MAIN SLIDER
804	X-2022-253-1	CHASSIS ASSY, MECHANICAL
805	X-3949-924-1	STOPPER ASSY, PENDULUM
806	3-947-503-21	SCREW (M1.4)
807	3-732-817-11	SCREW (2X4.5), TAPPING
808	3-973-266-11	SCREW (M2X2.2 (MEK)), HEAD
809	3-973-142-01	STOPPER, COASTER PUNCHING
810	X-3946-690-2	ARM (S) ASSY, GL
811	X-3946-689-2	ARM (T) ASSY, GL
812	3-973-146-02	SPRING (S), GL TORSION
813	3-973-156-02	SPRING (T), GL TORSION
814	3-973-264-01	GEAR (S), GL
815	3-973-138-01	GEAR (T), GL
816	3-727-176-01	WASHER, STOPPER
817	3-973-143-01	WASHER, COASTER STOPPER
818	3-057-339-01	COVER, ENCODER
819	3-057-340-01	COVER, CAPSTAN
820	3-057-282-01	SLIDER, MAIN
821	1-657-785-11	FP-248 FLEXIBLE BOARD (DEW SENSOR)
822	3-057-320-01	BLOCK, REEL LOCK RELEASE
823	3-057-354-01	SPRING, REEL LOCK RELEASE
824	A-1154-723-A	MD-76 BOARD, COMPLETE
* 825	3-066-170-01	HOLDER (A), SENSOR
* 826	3-057-555-01	HOLDER, LED
827	X-3950-199-1	BASE (S) ASSY, REEL (SERVICE)
828	X-3950-200-2	BASE (T) ASSY, REEL (SERVICE)
829	3-057-265-01	RETAINER, REEL BASE
831	3-726-829-01	WASHER, STOPPER
D001	6-500-652-01	DIODE GL453SE0000F (TAPE LED)
M903	8-835-648-13	MOTOR, DC SCD17A/C-NP (CAPSTAN)
M904	X-3949-928-1	MOTOR ASSY, REEL
Q001	6-500-402-01	TRANISTOR PT4850FE000F (TAPE END SENSOR)
Q002	6-500-402-01	TRANISTOR PT4850FE000F (TAPE TOP SENSOR)

5-1-9. MECHANISM DECK ASSEMBLY-4 (CASSETTE COMPARTMENT)

ns : not supplied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M905
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Ref. No.	Part No.	Description
851	A-1192-518-A	BLOCK ASSY (DOOR TO)
852	3-732-817-11	SCREW (2X4.5), TAPPING
853	3-057-253-01	GEAR, WHEEL
854	3-057-254-01	GEAR (A)
855	3-057-255-01	GEAR (B)
856	A-7094-689-B	GEAR (CD) BLOCK ASSY (SERVICE)
857	3-947-503-21	SCREW (M1.4)
858	A-1192-516-A	DOOR BLOCK ASSY, FL
M905	X-3949-925-4	MOTOR ASSY, FL

5-2. ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description			
	1-675-561-11	FP-104 FLEXIBLE BOARD			
		********************			
		(CN004 and S004 are not included in FP-104 flexible board.)			
		< CONNECTOR >			
CN004	1-770-312-21	CONNECTOR 4P			
		< SWITCH >			
S004	1-762-351-22	SWITCH, PUSH (1 KEY) (REC PROOF)			

Ref. No.	Part No.	Description			
	1-657-785-11	FP-248 FLEXIBLE BOARD (DEW SENSOR)			
		********************			

Ref. No.	Part No.	Description			
	A-1166-869-A	FR-253 BOARD, COMPLETE			
		**********************			
		< CAPACITOR >			
C101	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C102	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C103	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C104	1-126-392-11	ELECT CHIP	100uF	20%	6.3V
C106	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C107	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		< CONNECTOR >			
CN101	1-816-374-51	CONNECTOR, FFC/FPC 40P			
		< DIODE >			
D101	8-719-056-85	DIODE	UDZ-TE-17-8.2B		
D102	8-719-056-85	DIODE	UDZ-TE-17-8.2B		
D103	8-719-056-85	DIODE	UDZ-TE-17-8.2B		
D104	8-719-056-85	DIODE	UDZ-TE-17-8.2B		
D105	8-719-056-85	DIODE	UDZ-TE-17-8.2B		
D106	8-719-056-85	DIODE	UDZ-TE-17-8.2B		
D107	8-719-056-85	DIODE	UDZ-TE-17-8.2B		
D108	8-719-056-85	DIODE	UDZ-TE-17-8.2B		
D109	8-719-056-85	DIODE	UDZ-TE-17-8.2B		
D110	8-719-056-85	DIODE	UDZ-TE-17-8.2B		
D111	8-719-056-85	DIODE	UDZ-TE-17-8.2B		
D112	6-500-252-01	DIODE	SML-512WWT86 (📼 (CASSETTE))		
D113	6-500-781-01	DIODE	SML-521MUW (⏻ ON/STANDBY)		
D114	6-500-252-01	DIODE	SML-512WWT86 (DV-i.LINK)		
D115	6-500-252-01	DIODE	SML-512WWT86 (50)		
D116	6-500-252-01	DIODE	SML-512WWT86 (REW ◀◀)		
D117	6-500-252-01	DIODE	SML-512WWT86 (HDV-i.LINK)		
D118	6-500-252-01	DIODE	SML-512WWT86 (60)		
D119	6-501-030-01	DIODE	SML-412MWT86 (PLAY ▶)		
D120	6-500-252-01	DIODE	SML-512WWT86 (HDV)		
D121	6-500-252-01	DIODE	SML-512WWT86 (FF ▶▶)		
D122	6-500-252-01	DIODE	SML-512WWT86 (DVCAM)		
D123	6-500-252-01	DIODE	SML-512WWT86 (PAUSE ❚❚)		
D124	6-500-817-01	DIODE	(LED) SML-512UWT86 (REC ●)		
D125	6-500-252-01	DIODE	SML-512WWT86 (AUDIO DUB (A3))		
D126	6-500-252-01	DIODE	SML-512WWT86 (DUPLICATE PLUS)		
D127	8-719-056-85	DIODE	UDZ-TE-17-8.2B		
D128	8-719-056-85	DIODE	UDZ-TE-17-8.2B		
D129	8-719-056-85	DIODE	UDZ-TE-17-8.2B		
D130	6-500-252-01	DIODE	SML-512WWT86 (DVCAM-i.LINK)		
* D133	6-501-500-01	DIODE	SO-270S-WM-SD-TS (CASSETTE INDICATOR)		
* D134	6-501-500-01	DIODE	SO-270S-WM-SD-TS (CASSETTE INDICATOR)		
		< FERRITE BEAD >			
FB101	1-400-331-11	FERRITE, EMI (SMD) (1005)			
		< IC >			
IC101	8-742-430-00	HYB IC SBX3055-09			
IC102	6-703-381-01	IC PST3523UL			
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Q101	8-729-048-50	TRANSISTOR	2SK3018-T106		
Q102	8-729-048-50	TRANSISTOR	2SK3018-T106		
Q103	8-729-037-74	TRANSISTOR	UN9213J-(TX).SO		
Q104	8-729-041-23	TRANSISTOR	NDS356AP		
Q105	6-550-119-01	TRANSISTOR	DTC144EMT2L		
Q106	8-729-048-50	TRANSISTOR	2SK3018-T106		
		< RESISTOR >			
R101	1-218-970-11	RES-CHIP	27K	5%	1/16W
R102	1-218-970-11	RES-CHIP	27K	5%	1/16W
R104	1-218-970-11	RES-CHIP	27K	5%	1/16W
R105	1-218-970-11	RES-CHIP	27K	5%	1/16W
R106	1-218-964-11	RES-CHIP	8.2K	5%	1/16W
R107	1-218-964-11	RES-CHIP	8.2K	5%	1/16W
R108	1-218-970-11	RES-CHIP	27K	5%	1/16W
R109	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R110	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R111	1-218-967-11	RES-CHIP	15K	5%	1/16W
R113	1-218-967-11	RES-CHIP	15K	5%	1/16W
R114	1-218-967-11	RES-CHIP	15K	5%	1/16W
R115	1-218-964-11	RES-CHIP	8.2K	5%	1/16W
R116	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R117	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R118	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R119	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R120	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R121	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R123	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R124	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R125	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R126	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R127	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R128	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R129	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R130	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R131	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R132	1-218-944-11	RES-CHIP	180	5%	1/16W
R134	1-218-972-11	RES-CHIP	39K	5%	1/16W

Ref. No.	Part No.	Description			
R136	1-218-937-11	RES-CHIP	47	5%	1/16W
R137	1-218-972-11	RES-CHIP	39K	5%	1/16W
R139	1-218-941-81	RES-CHIP	100	5%	1/16W
R140	1-218-941-81	RES-CHIP	100	5%	1/16W
R142	1-218-973-11	RES-CHIP	47K	5%	1/16W
R143	1-218-953-11	RES-CHIP	1K	5%	1/16W
R144	1-218-950-11	RES-CHIP	560	5%	1/16W
R145	1-218-950-11	RES-CHIP	560	5%	1/16W
R146	1-218-950-11	RES-CHIP	560	5%	1/16W
R147	1-218-950-11	RES-CHIP	560	5%	1/16W
R148	1-218-950-11	RES-CHIP	560	5%	1/16W
R149	1-218-944-11	RES-CHIP	180	5%	1/16W
R150	1-218-950-11	RES-CHIP	560	5%	1/16W
R151	1-218-950-11	RES-CHIP	560	5%	1/16W
R152	1-218-950-11	RES-CHIP	560	5%	1/16W
R153	1-218-950-11	RES-CHIP	560	5%	1/16W
R154	1-218-953-11	RES-CHIP	1K	5%	1/16W
R155	1-218-950-11	RES-CHIP	560	5%	1/16W
R156	1-218-950-11	RES-CHIP	560	5%	1/16W
R161	1-218-989-11	RES-CHIP	1M	5%	1/16W
R162	1-218-989-11	RES-CHIP	1M	5%	1/16W
R163	1-218-929-11	RES-CHIP	10	5%	1/16W
R164	1-218-929-11	RES-CHIP	10	5%	1/16W
R167	1-218-950-11	RES-CHIP	560	5%	1/16W
R168	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R169	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R172	1-218-929-11	RES-CHIP	10	5%	1/16W
R173	1-218-989-11	RES-CHIP	1M	5%	1/16W
R174	1-218-953-11	RES-CHIP	1K	5%	1/16W
R175	1-218-953-11	RES-CHIP	1K	5%	1/16W

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	
RV101	1-225-950-11	RES, VAR, CARBON (AUDIO REC LEVEL (CH-1 (DUB CH-3)))	10K
RV102	1-225-950-11	RES, VAR, CARBON (AUDIO REC LEVEL (CH-2 (DUB CH-4)))	10K

< SWITCH >

Ref. No.	Part No.	Description
S101	1-572-342-11	SWITCH, SLIDE (INPUT SELECT)
S102	1-572-342-11	SWITCH, SLIDE (AUDIO OUTPUT SELECT)
S103	1-572-342-11	SWITCH, SLIDE (TIMER)
S104	1-572-272-11	SWITCH, SLIDE (AUDIO INPUT)
S105	1-572-342-11	SWITCH, SLIDE (DISPLAY OUTPUT)
S106	1-572-272-11	SWITCH, SLIDE (KEY INH)
S107	1-786-157-11	SWITCH, TACTILE (⇦)
S108	1-771-428-12	SWITCH, TACTILE (DUPLICATE PLUS)
S109	1-786-157-11	SWITCH, TACTILE (⇨)
S110	1-771-428-12	SWITCH, TACTILE (AUDIO DUB (A3))
S111	1-786-157-11	SWITCH, TACTILE (⇩)
S112	1-771-428-12	SWITCH, TACTILE (REC ●)
S113	1-786-157-11	SWITCH, TACTILE (⇧)
S114	1-786-157-11	SWITCH, TACTILE (DISPLAY)
S115	1-771-428-12	SWITCH, TACTILE (FF ▶▶)
S116	1-771-428-12	SWITCH, TACTILE (REW ◀◀)
S117	1-786-157-11	SWITCH, TACTILE (EXEC)
S118	1-786-157-11	SWITCH, TACTILE (STATUS CHECK)
S119	1-786-157-11	SWITCH, TACTILE (COUNTER SELECT)
S120	1-771-428-12	SWITCH, TACTILE (STOP ■)
S121	1-771-428-12	SWITCH, TACTILE (PAUSE ❚❚)
S122	1-771-428-12	SWITCH, TACTILE (PLAY ▶)
S123	1-771-428-12	SWITCH, TACTILE (EJECT ⏏)
S124	1-786-157-11	SWITCH, TACTILE (MENU)
S125	1-786-157-11	SWITCH, TACTILE (COUNTER RESET (A2))
S126	1-786-157-11	SWITCH, TACTILE (INDEX (A1))
S127	1-786-157-11	SWITCH, TACTILE (⏻ ON/STANDBY)

A-1166-870-A HP-141 BOARD, COMPLETE
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< CAPACITOR >

Ref. No.	Part No.	Description			
C2000	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C2001	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2002	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2003	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C2004	1-135-856-91	TANTAL. CHIP	100uF	20%	10V
C2005	1-135-856-91	TANTAL. CHIP	100uF	20%	10V
C2006	1-164-858-11	CERAMIC CHIP	22PF	5%	50V
C2007	1-164-858-11	CERAMIC CHIP	22PF	5%	50V

< CONNECTOR >

Ref. No.	Part No.	Description
* CN2000	1-818-199-61	CONNECTOR, FFC/FPC 8P

< DIODE >

Ref. No.	Part No.	Description
D2000	8-719-421-59	DIODE MA3130WA-TX
D2001	8-719-421-59	DIODE MA3130WA-TX

< FERRITE BEAD >

Ref. No.	Part No.	Description
FB2000	1-500-241-22	BEAD, FERRITE (CHIP) (2012)
FB2001	1-500-241-22	BEAD, FERRITE (CHIP) (2012)

< IC >

Ref. No.	Part No.	Description
IC2000	8-759-359-49	IC NJM3414AV (TE2)

< JACK >

Ref. No.	Part No.	Description
J2000	1-566-822-31	JACK (PHONES)

< TRANSISTOR >

Ref. No.	Part No.	Description	
Q2000	8-729-202-38	TRANSISTOR	2SC3326N-A
Q2001	8-729-202-38	TRANSISTOR	2SC3326N-A
Q2002	8-729-202-38	TRANSISTOR	2SC3326N-A
Q2003	8-729-202-38	TRANSISTOR	2SC3326N-A

< RESISTOR >

Ref. No.	Part No.	Description			
R2000	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2001	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2002	1-218-973-11	RES-CHIP	47K	5%	1/16W
R2003	1-218-973-11	RES-CHIP	47K	5%	1/16W
R2004	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2005	1-218-969-11	RES-CHIP	22K	5%	1/16W
R2006	1-218-969-11	RES-CHIP	22K	5%	1/16W
R2007	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2008	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R2009	1-218-957-11	RES-CHIP	2.2K	5%	1/16W

	Ref. No.	Part No.	Description			
	R2010	1-216-798-11	METAL CHIP	12	5%	1/10W
	R2011	1-216-798-11	METAL CHIP	12	5%	1/10W
	R2012	1-218-989-11	RES-CHIP	1M	5%	1/16W
	R2013	1-218-989-11	RES-CHIP	1M	5%	1/16W
	R2014	1-218-990-81	SHORT CHIP	0		
	R2017	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
	R2018	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
	R2019	1-216-798-11	METAL CHIP	12	5%	1/10W
	R2020	1-216-798-11	METAL CHIP	12	5%	1/10W
			< VARIABLE RESISTOR >			
*	RV2000	1-227-754-11	RES, VAR, CARBON		10K (PHONE LEVEL)	

A-1179-542-A JK-309 BOARD, COMPLETE (SERVICE)

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(IC6000 is not supplied, but this is included in JK-309 complete board.)

	Ref. No.	Part No.	Description			
			< CAPACITOR >			
	C6000	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
	C6001	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
	C6002	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
	C6003	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
	C6004	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
	C6005	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
	C6006	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
	C6007	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
	C6008	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
	C6009	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
	C6010	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
	C6011	1-165-851-91	TANTAL. CHIP	10uF	20%	6.3V
	C6012	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
	C6013	1-165-851-91	TANTAL. CHIP	10uF	20%	6.3V
	C6014	1-165-851-91	TANTAL. CHIP	10uF	20%	6.3V
	C6015	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
	C6016	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
	C6034	1-165-851-91	TANTAL. CHIP	10uF	20%	6.3V
			< CONNECTOR >			
*	CN721	1-691-374-51	CONNECTOR, FFC/FPC 10P			
	CN741	1-785-806-12	CONNECTOR, SQUARE TYPE (INDI) 4P (HDV/DV)			
	CN742	1-580-756-21	PIN, CONNECTOR (SMD) 7P			
	CN6001	1-817-920-11	CONNECTOR, FPC (ZIF) 80P			
*	CN6002	1-819-696-21	CONNECTOR, HDMI (HDMI OUT)			
			< DIODE >			
	D721	8-719-067-59	DIODE MAZ9120D0LS0-TX/L			
	D722	8-719-067-59	DIODE MAZ9120D0LS0-TX/L			
	D723	8-719-067-59	DIODE MAZ9120D0LS0-TX/L			
	D741	6-500-750-01	DIODE NSAD500H-T1-A			
			< FERRITE BEAD >			
	FB721	1-500-245-22	BEAD, FERRITE (CHIP) (2012)			
	FB722	1-500-245-22	BEAD, FERRITE (CHIP) (2012)			
	FB723	1-500-245-22	BEAD, FERRITE (CHIP) (2012)			
	FB724	1-500-245-22	BEAD, FERRITE (CHIP) (2012)			
	FB725	1-500-245-22	BEAD, FERRITE (CHIP) (2012)			

	Ref. No.	Part No.	Description			
			< FILTER >			
	FL6001	1-234-939-21	FILTER, EMI REMOVAL (SMD)			
	FL6002	1-234-939-21	FILTER, EMI REMOVAL (SMD)			
	FL6003	1-234-939-21	FILTER, EMI REMOVAL (SMD)			
	FL6004	1-234-939-21	FILTER, EMI REMOVAL (SMD)			
			< IC >			
	IC6000	(Not supplied)	IC SII9030CTU-1.1			
	IC6001	6-704-178-01	IC TC7SZ08AFE			
			< JACK >			
	J721	1-691-737-21	JACK (SMALL TYPE) (CONTROL S)			
	J722	1-565-276-31	JACK, ULTRA SMALL 1P (LANC)			
			< LINE FILTER >			
*	LF6000	1-813-308-11	COMMON MODE CHOKE			
*	LF6001	1-813-308-11	COMMON MODE CHOKE			
*	LF6002	1-813-308-11	COMMON MODE CHOKE			
*	LF6003	1-813-308-11	COMMON MODE CHOKE			
			< TRANSISTOR >			
	Q6000	6-550-014-01	TRANSISTOR	SSM6N15FU (TE85R)		
			< RESISTOR >			
	R701	1-218-929-11	RES-CHIP	10	5%	1/16W
	R6000	1-216-809-11	METAL CHIP	100	5%	1/10W
	R6001	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
	R6002	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
	R6003	1-216-833-11	METAL CHIP	10K	5%	1/10W
	R6004	1-216-833-11	METAL CHIP	10K	5%	1/10W
	R6005	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
	R6006	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
	R6007	1-218-840-11	METAL CHIP	510	0.5%	1/10W
	R6008	1-216-841-11	METAL CHIP	47K	5%	1/10W
	R6009	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
	R6010	1-216-797-11	METAL CHIP	10	5%	1/10W
	R6011	1-216-797-11	METAL CHIP	10	5%	1/10W
	R6012	1-216-797-11	METAL CHIP	10	5%	1/10W
	R6013	1-216-797-11	METAL CHIP	10	5%	1/10W
	R6014	1-216-797-11	METAL CHIP	10	5%	1/10W
	R6015	1-216-797-11	METAL CHIP	10	5%	1/10W
	R6016	1-216-797-11	METAL CHIP	10	5%	1/10W
	R6017	1-216-797-11	METAL CHIP	10	5%	1/10W
	R6018	1-216-824-11	METAL CHIP	1.8K	5%	1/10W
	R6019	1-216-824-11	METAL CHIP	1.8K	5%	1/10W
	R6020	1-216-797-11	METAL CHIP	10	5%	1/10W
	R6021	1-216-864-11	SHORT CHIP	0		
	R6022	1-216-864-11	SHORT CHIP	0		
	R6029	1-216-864-11	SHORT CHIP	0		
	R6030	1-216-864-11	SHORT CHIP	0		
	R6031	1-216-864-11	SHORT CHIP	0		
	R6032	1-216-864-11	SHORT CHIP	0		
	R6033	1-216-864-11	SHORT CHIP	0		
	R6034	1-216-809-11	METAL CHIP	100	5%	1/10W
	R6035	1-216-809-11	METAL CHIP	100	5%	1/10W
	R6036	1-216-809-11	METAL CHIP	100	5%	1/10W
	R6037	1-216-809-11	METAL CHIP	100	5%	1/10W

Ref. No.	Part No.	Description			
R6038	1-216-809-11	METAL CHIP	100	5%	1/10W
R6039	1-216-809-11	METAL CHIP	100	5%	1/10W
R6040	1-216-809-11	METAL CHIP	100	5%	1/10W
R6041	1-216-809-11	METAL CHIP	100	5%	1/10W
R6042	1-216-809-11	METAL CHIP	100	5%	1/10W
R6043	1-216-809-11	METAL CHIP	100	5%	1/10W
R6044	1-216-809-11	METAL CHIP	100	5%	1/10W
R6045	1-216-809-11	METAL CHIP	100	5%	1/10W
R6046	1-216-809-11	METAL CHIP	100	5%	1/10W
R6047	1-216-809-11	METAL CHIP	100	5%	1/10W
R6048	1-216-809-11	METAL CHIP	100	5%	1/10W
R6049	1-216-809-11	METAL CHIP	100	5%	1/10W
R6050	1-216-809-11	METAL CHIP	100	5%	1/10W
R6051	1-216-809-11	METAL CHIP	100	5%	1/10W
R6052	1-216-809-11	METAL CHIP	100	5%	1/10W
R6053	1-216-809-11	METAL CHIP	100	5%	1/10W
R6054	1-216-809-11	METAL CHIP	100	5%	1/10W
R6055	1-216-809-11	METAL CHIP	100	5%	1/10W
R6056	1-216-809-11	METAL CHIP	100	5%	1/10W
R6057	1-216-809-11	METAL CHIP	100	5%	1/10W
R6058	1-216-809-11	METAL CHIP	100	5%	1/10W
R6059	1-216-809-11	METAL CHIP	100	5%	1/10W
R6060	1-216-809-11	METAL CHIP	100	5%	1/10W
R6061	1-216-809-11	METAL CHIP	100	5%	1/10W
R6062	1-216-809-11	METAL CHIP	100	5%	1/10W
R6063	1-216-809-11	METAL CHIP	100	5%	1/10W
R6064	1-216-809-11	METAL CHIP	100	5%	1/10W
R6065	1-216-809-11	METAL CHIP	100	5%	1/10W
R6066	1-216-809-11	METAL CHIP	100	5%	1/10W
R6067	1-216-809-11	METAL CHIP	100	5%	1/10W
R6068	1-216-809-11	METAL CHIP	100	5%	1/10W
R6069	1-216-809-11	METAL CHIP	100	5%	1/10W
		< COMPOSITION CIRCUIT BLOCK >			
RB001	1-234-400-21	CONDUCTOR, NETWORK (2010X4)			
		< SWITCH >			
S721	1-571-914-21	SWITCH, KEY BOARD (RESET)			
		< THERMISTOR >			
TH741	1-805-726-11	THERMISTOR, POSITIVE			
TH742	1-805-726-11	THERMISTOR, POSITIVE			
TH743	1-805-726-11	THERMISTOR, POSITIVE			
TH744	1-805-726-11	THERMISTOR, POSITIVE			

A-1166-865-A JV-002 BOARD, COMPLETE
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Ref. No.	Part No.	Description			
		< CAPACITOR >			
C1002	1-164-866-11	CERAMIC CHIP	47PF	5%	50V
C1003	1-164-866-11	CERAMIC CHIP	47PF	5%	50V
C1004	1-100-743-91	CERAMIC CHIP	2.2uF	20%	16V
C1005	1-100-743-91	CERAMIC CHIP	2.2uF	20%	16V
C1006	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C1007	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C1008	1-100-966-91	CERAMIC CHIP	10uF	20%	10V
C1009	1-100-966-91	CERAMIC CHIP	10uF	20%	10V
C1010	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
		< CONNECTOR >			
* CN1000	1-580-789-22	PIN, CONNECTOR (SMD) 6P			
* CN1001	1-764-007-11	PIN, CONNECTOR (SMD) 12P			
* CN1002	1-565-771-71	CONNECTOR, FPC 12P			
		< FERRITE BEAD >			
FB1000	1-500-245-22	BEAD, FERRITE (CHIP) (2012)			
FB1001	1-500-245-22	BEAD, FERRITE (CHIP) (2012)			
FB1002	1-500-245-22	BEAD, FERRITE (CHIP) (2012)			
FB1003	1-500-245-22	BEAD, FERRITE (CHIP) (2012)			
		< IC >			
IC1000	8-759-710-77	IC NJM4560MD			
		< JACK >			
* J1000	1-780-378-11	TERMINAL BOARD (S VIDEO/VIDEO/AUDIO)			
J1001	1-785-572-11	CONNECTOR, BNC (COMPONENT OUT (Y))			
J1002	1-785-572-11	CONNECTOR, BNC (COMPONENT OUT (Pb/Cb))			
J1003	1-785-572-11	CONNECTOR, BNC (COMPONENT OUT (Pr/Cr))			
		< RESISTOR >			
R1000	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1001	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1002	1-218-972-11	RES-CHIP	39K	5%	1/16W
R1003	1-218-972-11	RES-CHIP	39K	5%	1/16W
R1004	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1005	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R1006	1-218-956-11	RES-CHIP	1.8K	5%	1/16W
R1007	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1008	1-218-971-11	RES-CHIP	33K	5%	1/16W
R1009	1-218-971-11	RES-CHIP	33K	5%	1/16W
R1010	1-218-971-11	RES-CHIP	33K	5%	1/16W
R1011	1-218-971-11	RES-CHIP	33K	5%	1/16W
R1012	1-218-971-11	RES-CHIP	33K	5%	1/16W
R1013	1-218-971-11	RES-CHIP	33K	5%	1/16W
R1014	1-218-971-11	RES-CHIP	33K	5%	1/16W
R1015	1-218-971-11	RES-CHIP	33K	5%	1/16W
R1016	1-218-971-11	RES-CHIP	33K	5%	1/16W
R1017	1-218-971-11	RES-CHIP	33K	5%	1/16W
R1018	1-218-966-11	RES-CHIP	12K	5%	1/16W
R1019	1-218-966-11	RES-CHIP	12K	5%	1/16W
R1020	1-218-967-11	RES-CHIP	15K	5%	1/16W
R1021	1-218-967-11	RES-CHIP	15K	5%	1/16W
R1022	1-218-967-11	RES-CHIP	15K	5%	1/16W
R1023	1-218-967-11	RES-CHIP	15K	5%	1/16W
R1024	1-218-941-81	RES-CHIP	100	5%	1/16W
R1025	1-218-941-81	RES-CHIP	100	5%	1/16W
R1026	1-218-989-11	RES-CHIP	1M	5%	1/16W
R1027	1-218-989-11	RES-CHIP	1M	5%	1/16W
		< SWITCH >			
S1000	1-762-825-11	SWITCH, SLIDE (AUDIO INPUT LEVEL)			

Ref. No.	Part No.	Description			
	A-1154-723-A	MD-76 BOARD, COMPLETE *********************			
*	3-057-555-01	HOLDER, LED			
*	3-066-170-01	HOLDER (A), SENSOR			
	3-973-185-01	ENCODER			
		< CAPACITOR >			
C001	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C002	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
		< CONNECTOR >			
CN001	1-691-359-51	CONNECTOR, FFC/FPC (ZIF) 21P			
CN002	1-691-359-51	CONNECTOR, FFC/FPC (ZIF) 21P			
CN003	1-691-356-51	CONNECTOR, FFC/FPC (ZIF) 18P			
		< DIODE >			
D001	6-500-652-01	DIODE GL453SE0000F (TAPE LED)			
		< IC >			
IC001	8-759-510-71	IC BA10358F-E2			
IC002	8-719-052-03	ELEMENT, HOLE THS124TE85L			
IC003	8-719-052-03	ELEMENT, HOLE THS124TE85L			
IC004	8-719-082-56	PHOTO COUPLER TLP907 (LB, SONY)			
IC005	8-719-082-56	PHOTO COUPLER TLP907 (LB, SONY)			
		< JUMPER RESISTOR >			
JR001	1-216-296-11	SHORT CHIP	0		
JR003	1-216-296-11	SHORT CHIP	0		
JR004	1-216-296-11	SHORT CHIP	0		
JR005	1-216-296-11	SHORT CHIP	0		
JR006	1-216-864-11	SHORT CHIP	0		
		< TRANSISTOR >			
Q001	6-550-402-01	TRANSISTOR	PT4850FE000F (TAPE END SENSOR)		
Q002	6-550-402-01	TRANSISTOR	PT4850FE000F (TAPE TOP SENSOR)		
		< RESISTOR >			
R001	1-216-814-11	METAL CHIP	270	5%	1/10W
R003	1-216-810-11	METAL CHIP	120	5%	1/10W
R004	1-216-837-11	METAL CHIP	22K	5%	1/10W
R005	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R006	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R007	1-216-809-11	METAL CHIP	100	5%	1/10W
R008	1-216-837-11	METAL CHIP	22K	5%	1/10W
R009	1-216-837-11	METAL CHIP	22K	5%	1/10W
R010	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R011	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R012	1-216-174-00	RES-CHIP	100	5%	1/8W
R013	1-216-837-11	METAL CHIP	22K	5%	1/10W
R014	1-216-184-00	RES-CHIP	270	5%	1/8W
R015	1-216-814-11	METAL CHIP	270	5%	1/10W
R028	1-216-809-11	METAL CHIP	100	5%	1/10W
R029	1-216-809-11	METAL CHIP	100	5%	1/10W
R030	1-216-864-11	SHORT CHIP	0		
R031	1-216-864-11	SHORT CHIP	0		
R032	1-216-864-11	SHORT CHIP	0		

Ref. No.	Part No.	Description			
R033	1-216-864-11	SHORT CHIP	0		
		< VARIABLE RESISTOR >			
RV001	1-241-770-11	RES, ADJ CERMET	1M (GAIN)		
RV002	1-238-019-11	RES, ADJ CERMET	47K (OFFSET)		
RV003	1-241-770-11	RES, ADJ CERMET	1M (GAIN)		
RV004	1-238-019-11	RES, ADJ CERMET	47K (OFFSET)		
		< SWITCH >			
S001	1-762-551-21	SWITCH, PUSH (L/S CAS)			
S002	1-771-604-11	SWITCH, DETECTION (C IN)			
S003	1-771-604-11	SWITCH, DETECTION (CC DOWN)			

Ref. No.	Part No.	Description			
	A-1166-868-A	PD-287 BOARD, COMPLETE *********************			
		< CAPACITOR >			
C6103	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C6104	1-125-841-91	TANTAL. CHIP	22uF	20%	4V
C6105	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C6107	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6108	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6109	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6110	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C6111	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6112	1-100-786-91	TANTAL. CHIP	22uF	20%	6.3V
C6115	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6116	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6117	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6119	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C6120	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6122	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C6123	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C6124	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6125	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6127	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6128	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6129	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		< CONNECTOR >			
* CN6101	1-785-905-51	CONNECTOR, FFC/FPC (ZIF) 24P			
* CN6102	1-785-905-51	CONNECTOR, FFC/FPC (ZIF) 24P			
		< DIODE >			
* D6105	6-501-476-01	DIODE NSSW008CT-T071 (LCD BACKLIGHT)			
* D6106	6-501-476-01	DIODE NSSW008CT-T071 (LCD BACKLIGHT)			
* D6107	6-501-476-01	DIODE NSSW008CT-T071 (LCD BACKLIGHT)			
D6109	8-719-074-67	DIODE EDZ-TE61-5.6B			
		< FERRITE BEAD >			
FB6101	1-400-331-11	FERRITE, EMI (SMD) (1005)			
		< IC >			
IC6101	8-759-693-13	IC NJM12904V (TE2)			
IC6102	8-753-229-98	IC CXM3006CR-T4			

PD-287 | POWER BLOCK (ACS1581-MA) | RP-243

Ref. No.	Part No.	Description			
		< COIL >			
L6101	1-400-588-11	INDUCTOR	10uH		
L6103	1-400-588-11	INDUCTOR	10uH		
L6104	1-400-588-11	INDUCTOR	10uH		
		< TRANSISTOR >			
Q6104	8-729-054-50	TRANSISTOR	UP04501008S0		
Q6105	8-729-026-53	TRANSISTOR	2SA1576A-T106-R		
Q6106	8-729-026-53	TRANSISTOR	2SA1576A-T106-R		
Q6107	8-729-026-53	TRANSISTOR	2SA1576A-T106-R		
Q6108	6-550-234-01	TRANSISTOR	UNR32A300LS0		
Q6109	8-729-041-23	TRANSISTOR	NDS356AP		
Q6110	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
		< RESISTOR >			
R6101	1-216-864-11	SHORT CHIP	0		
R6104	1-218-975-11	RES-CHIP	68K	5%	1/16W
R6105	1-208-934-11	METAL CHIP	91K	0.5%	1/16W
R6106	1-218-949-11	RES-CHIP	470	5%	1/16W
R6109	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R6110	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R6111	1-208-943-11	METAL CHIP	220K	0.5%	1/16W
R6112	1-218-973-11	RES-CHIP	47K	5%	1/16W
R6113	1-218-973-11	RES-CHIP	47K	5%	1/16W
R6114	1-218-953-11	RES-CHIP	1K	5%	1/16W
R6115	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6116	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R6117	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R6118	1-208-643-11	METAL CHIP	22	0.5%	1/16W
R6119	1-208-643-11	METAL CHIP	22	0.5%	1/16W
R6121	1-218-977-11	RES-CHIP	100K	5%	1/16W
R6122	1-208-643-11	METAL CHIP	22	0.5%	1/16W
R6123	1-218-978-11	RES-CHIP	120K	5%	1/16W
R6124	1-218-990-81	SHORT CHIP	0		
R6126	1-218-989-11	RES-CHIP	1M	5%	1/16W
⚠	1-468-666-12	POWER BLOCK (ACS1581-MA) *************************			
	7-621-759-45	+PSW 2.6X6			
	7-682-947-01	+PSW 3X6			
		< FUSE >			
⚠F101	9-885-020-10	FUSE (2.5A/250V)			
	A-1166-862-A	RP-243 BOARD, COMPLETE **********************			
		< CAPACITOR >			
C1001	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C1002	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C1003	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C1004	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C1005	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C2000	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2001	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
C2002	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
C2003	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2004	1-100-415-11	CERAMIC CHIP	0.47uF	10%	6.3V
C2005	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2006	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2007	1-100-415-11	CERAMIC CHIP	0.47uF	10%	6.3V
C2008	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2009	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2010	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2011	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2012	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2013	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2014	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2015	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
		< CONNECTOR >			
CN1001	1-818-441-91	CONNECTOR, BOARD TO BOARD 100P			
* CN1002	1-691-382-51	CONNECTOR, FFC/FPC 18P			
CN1003	1-691-359-51	CONNECTOR, FFC/FPC (ZIF) 21P			
CN1004	1-691-359-51	CONNECTOR, FFC/FPC (ZIF) 21P			
* CN1005	1-691-375-51	CONNECTOR, FFC/FPC (ZIF) 11P			
* CN2000	1-691-374-51	CONNECTOR, FFC/FPC 10P			
		< IC >			
IC1001	8-759-338-95	IC NJM2903V (TE2)			
IC2000	6-707-432-01	IC TLS26A102PFBR			
		< COIL >			
L2000	1-469-967-21	INDUCTOR	10uH		
L2001	1-469-967-21	INDUCTOR	10uH		
L2002	1-469-967-21	INDUCTOR	10uH		
		< TRANSISTOR >			
Q1001	8-729-037-52	TRANSISTOR	2SD2216J-QR (TX).SO		
		< RESISTOR >			
R1004	1-218-990-81	SHORT CHIP	0		
R1099	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1100	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1101	1-218-989-11	RES-CHIP	1M	5%	1/16W
R1102	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1106	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1107	1-218-973-11	RES-CHIP	47K	5%	1/16W
R1110	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R1111	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R2003	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2004	1-218-969-11	RES-CHIP	22K	5%	1/16W
R2007	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2008	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R2009	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R2011	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R2013	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R2014	1-218-990-81	SHORT CHIP	0		
R2015	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R2018	1-208-869-11	METAL CHIP	180	0.5%	1/16W
R2019	1-208-869-11	METAL CHIP	180	0.5%	1/16W

- Refer to page 5-1 for mark ⚠.

Ref. No.	Part No.	Description			
R2020	1-208-869-11	METAL CHIP	180	0.5%	1/16W
R2021	1-208-869-11	METAL CHIP	180	0.5%	1/16W
	A-1166-871-A	SH-023 BOARD, COMPLETE **********************			
		< CONNECTOR >			
CN701	1-580-057-11	PIN, CONNECTOR (SMD) 4P			
		< SWITCH >			
S701	1-786-380-11	SWITCH, PUSH (1 KEY) (STANDBY)			
S702	1-786-380-11	SWITCH, PUSH (1 KEY) (PUSH OUT)			
	A-1166-873-A	VD-036 BOARD, COMPLETE (SERVICE) *********************** (IC2601, IC4202 and LP001 are not supplied, but they are included in VD-036 complete board.)			
		< BATTERY >			
⚠BT1001	1-756-128-11	BATTERY, LITHIUM (SECONDARY)			
		< BUZZER >			
BZ4601	1-825-579-11	BUZZER, PIEZOELECTRIC			
		< CAPACITOR >			
C1002	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C1003	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C1004	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1005	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1007	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1008	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1009	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1010	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1011	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1012	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1013	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1014	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1015	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C1016	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1018	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1021	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1023	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1024	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C1026	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C1027	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1028	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1029	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1030	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
C1031	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C1033	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1034	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
C1036	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
C1037	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
C1038	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
* C1041	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C1042	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1043	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1044	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1045	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1046	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1047	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1048	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1049	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1057	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1058	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1059	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1060	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1061	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1062	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1063	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1064	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1073	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1074	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1075	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1076	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1077	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1078	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C1079	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1080	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1081	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1082	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1083	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1084	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1085	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1087	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C1090	1-113-991-11	TANTAL. CHIP	33uF	20%	16V
C1091	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
C1093	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C1094	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C1095	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1096	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1097	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C1098	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1099	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C1201	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C1202	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C1203	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C1204	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1205	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1206	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1207	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1208	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1209	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1211	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1212	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1213	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1214	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C1215	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

注意

電池の交換は，正しく行わないと破裂する恐れがあります。電池を交換する場合には必ず同じ型名の電池又は同等品と交換してください。

- Refer to page 5-1 for mark ⚠.

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Ref. No.	Part No.	Description			
C1216	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C1217	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1219	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1221	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1224	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C1225	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C1226	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
C1227	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C1228	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C1229	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
C1232	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
C1233	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1235	1-113-991-11	TANTAL. CHIP	33uF	20%	16V
C1237	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
* C1240	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C1241	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C1242	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C1245	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C1246	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C1247	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C1249	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C1258	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1259	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1260	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1262	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C1263	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1264	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C1276	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1277	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C1279	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C1280	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C1281	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C1282	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C1285	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C1288	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1289	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1292	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1293	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1294	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1295	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C1296	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C1297	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1401	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1402	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1404	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1406	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C1407	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1409	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1410	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1411	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C1412	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1413	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C1415	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1417	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
* C1418	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C1420	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
C1421	1-100-591-91	CERAMIC CHIP	1uF	10%	25V
C1422	1-127-738-91	CERAMIC CHIP	4.7uF	10%	25V
C1423	1-127-738-91	CERAMIC CHIP	4.7uF	10%	25V
C1424	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1425	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1426	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1427	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1430	1-128-400-11	ELECT CHIP	47uF	20%	25V
C1432	1-128-400-11	ELECT CHIP	47uF	20%	25V
C1433	1-128-400-11	ELECT CHIP	47uF	20%	25V
C1435	1-128-709-21	TANTAL. CHIP	68uF	20%	10V
C1437	1-113-991-11	TANTAL. CHIP	33uF	20%	16V
C1440	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C1442	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C1445	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C1447	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C1450	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C1451	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C1453	1-113-985-11	TANTAL. CHIP	10uF	20%	20V
C1454	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C1460	1-113-991-11	TANTAL. CHIP	33uF	20%	16V
C1476	1-127-738-91	CERAMIC CHIP	4.7uF	10%	25V
C1477	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C1478	1-128-400-11	ELECT CHIP	47uF	20%	25V
C1479	1-127-738-91	CERAMIC CHIP	4.7uF	10%	25V
C1480	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1481	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1482	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1483	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C1484	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1485	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1801	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C1802	1-100-609-11	TANTAL. CHIP	220uF		5V
C1804	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C1805	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C1806	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C1807	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C1808	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1809	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1810	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1811	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1812	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1813	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1814	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1816	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1818	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1819	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1820	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1821	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1822	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1823	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1824	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1825	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C1826	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C1827	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1828	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1829	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1830	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1831	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V

Ref. No.	Part No.	Description			
C1832	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1833	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1834	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1835	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1837	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1838	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1839	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1840	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1841	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1842	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1843	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1871	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C1872	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1873	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C1875	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C1877	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1878	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C1879	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1880	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1881	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1882	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2001	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2002	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2003	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2004	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C2005	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C2006	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C2007	1-165-897-11	TANTAL. CHIP	22uF	20%	10V
C2008	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2009	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2010	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2011	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2012	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2013	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2201	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2202	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C2203	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C2204	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C2206	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C2208	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2209	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2210	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2211	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2212	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2213	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2214	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2215	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2216	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2217	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2219	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2220	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2221	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2222	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2224	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2225	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2226	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2227	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2228	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2229	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2230	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2231	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2232	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2233	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C2234	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2236	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2238	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C2239	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2240	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2401	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2502	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2503	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2601	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2602	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C2801	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C2802	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C2803	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2804	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2805	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2806	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2807	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C2808	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2809	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2810	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2811	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2812	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2813	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2814	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2815	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2816	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2817	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2818	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2819	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2820	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C2821	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2822	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3001	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C3002	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C3003	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3004	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C3005	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3006	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3008	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3009	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3010	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3011	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C3012	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3013	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C3015	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3016	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C3017	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C3018	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3019	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C3020	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C3021	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3022	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

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Ref. No.	Part No.	Description			
C3023	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3024	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3025	1-100-415-11	CERAMIC CHIP	0.47uF	10%	6.3V
C3026	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C3027	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C3201	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C3202	1-164-933-11	CERAMIC CHIP	220PF	10%	50V
C3203	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C3204	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C3205	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3206	1-164-852-11	CERAMIC CHIP	12PF	5%	50V
C3207	1-164-852-11	CERAMIC CHIP	12PF	5%	50V
C3208	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3209	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3210	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3211	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3212	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3214	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3215	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3216	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3217	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3218	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3219	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3220	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3600	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C3601	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C3602	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C3603	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C3604	1-164-936-11	CERAMIC CHIP	680PF	10%	50V
C3605	1-164-870-11	CERAMIC CHIP	68PF	5%	50V
C3606	1-164-870-11	CERAMIC CHIP	68PF	5%	50V
C3607	1-164-936-11	CERAMIC CHIP	680PF	10%	50V
C3608	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C3609	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C3611	1-100-966-91	CERAMIC CHIP	10uF	20%	10V
C3613	1-100-966-91	CERAMIC CHIP	10uF	20%	10V
C3614	1-137-934-91	TANTAL. CHIP	47uF	20%	10V
C3615	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C3616	1-100-743-91	CERAMIC CHIP	2.2uF	20%	16V
C3617	1-128-964-91	TANTAL. CHIP	100uF	20%	6.3V
C3618	1-137-689-91	TANTAL. CHIP	47uF	20%	16V
C3619	1-137-934-91	TANTAL. CHIP	47uF	20%	10V
C3620	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C3621	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C3622	1-100-743-91	CERAMIC CHIP	2.2uF	20%	16V
C3623	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C3624	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C3625	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C3626	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C3627	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C3628	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3629	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C3630	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3631	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C3632	1-165-897-11	TANTAL. CHIP	22uF	20%	10V
C3633	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C3634	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C3635	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C3636	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C3637	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C3638	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C3639	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C3640	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C3641	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C3642	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C3643	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C3644	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C3645	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3646	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C3647	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C3648	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C3649	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C3650	1-137-689-91	TANTAL. CHIP	47uF	20%	16V
C3651	1-137-689-91	TANTAL. CHIP	47uF	20%	16V
C3652	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
C3653	1-127-820-11	CERAMIC CHIP	4.7uF	10%	16V
C3654	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C3655	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C3656	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C3660	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C3661	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C3662	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C3663	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C3664	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C3665	1-164-862-11	CERAMIC CHIP	33PF	5%	50V
C3666	1-164-862-11	CERAMIC CHIP	33PF	5%	50V
C3667	1-100-672-11	CERAMIC CHIP	10uF	20%	16V
C3668	1-100-672-11	CERAMIC CHIP	10uF	20%	16V
C4001	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4002	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4003	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4004	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4005	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4006	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4007	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4008	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4009	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4010	1-100-415-11	CERAMIC CHIP	0.47uF	10%	6.3V
C4011	1-100-415-11	CERAMIC CHIP	0.47uF	10%	6.3V
C4012	1-100-415-11	CERAMIC CHIP	0.47uF	10%	6.3V
C4013	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
C4014	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
C4015	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
C4016	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4017	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4018	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4019	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4020	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4028	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4030	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4031	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4032	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4033	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4034	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4035	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

Ref. No.	Part No.	Description			
C4036	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4037	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4038	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4039	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4041	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C4042	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C4043	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C4044	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C4045	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4060	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4061	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4062	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4063	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4067	1-100-591-91	CERAMIC CHIP	1uF	10%	25V
C4201	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4202	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C4204	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C4205	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C4208	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4209	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4401	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4402	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4404	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4601	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4602	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C4603	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C4604	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C4605	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C4606	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C4609	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4610	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C4611	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C4612	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4613	1-126-392-11	ELECT CHIP	100uF	20%	6.3V
C4614	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C4615	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4616	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4617	1-126-405-11	ELECT CHIP	10uF	20%	50V
C4618	1-126-405-11	ELECT CHIP	10uF	20%	50V
C4619	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C4621	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4622	1-165-887-91	CERAMIC CHIP	0.22uF	10%	6.3V
C4623	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C4624	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4625	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
* C4626	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C4627	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C5000	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C5001	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C5002	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C5003	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C5004	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C5005	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5006	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5007	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5008	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5009	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5010	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5011	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5012	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5013	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C5014	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C5015	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C5016	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C5401	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5402	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5403	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5404	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C5405	1-127-738-91	CERAMIC CHIP	4.7uF	10%	25V
C5406	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C5407	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5408	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5411	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C5412	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5413	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C5414	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C5415	1-127-738-91	CERAMIC CHIP	4.7uF	10%	25V
C5416	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5417	1-127-738-91	CERAMIC CHIP	4.7uF	10%	25V
C5418	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C5419	1-164-934-11	CERAMIC CHIP	330PF	10%	50V
C5420	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C5421	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C5423	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C5424	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C5425	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5427	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5428	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5429	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5430	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C5431	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5432	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5434	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C5435	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5436	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5438	1-164-941-11	CERAMIC CHIP	0.0047uF	10%	16V
C5439	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5440	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5442	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5443	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C5444	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5447	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C5448	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5449	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C5450	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C5451	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C5452	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C5453	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5454	1-164-931-11	CERAMIC CHIP	100PF	10%	50V
C5455	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5456	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5457	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C5458	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V
C5459	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C5460	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V

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Ref. No.	Part No.	Description			
C5461	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5462	1-164-931-11	CERAMIC CHIP	100PF	10%	50V
C5463	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5464	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5465	1-164-858-11	CERAMIC CHIP	22PF	5%	50V
C5466	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5467	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C5470	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C5476	1-127-738-91	CERAMIC CHIP	4.7uF	10%	25V
C5477	1-113-985-11	TANTAL. CHIP	10uF	20%	20V
C5478	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5479	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C5480	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C5800	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5801	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5802	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5803	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5804	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5805	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5806	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5807	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5808	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5809	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5810	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5811	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5812	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5813	1-165-851-91	TANTAL. CHIP	10uF	20%	6.3V
C5814	1-165-851-91	TANTAL. CHIP	10uF	20%	6.3V
C5815	1-165-851-91	TANTAL. CHIP	10uF	20%	6.3V
C5823	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C5824	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C5825	1-164-852-11	CERAMIC CHIP	12PF	5%	50V
C5828	1-164-852-11	CERAMIC CHIP	12PF	5%	50V
C5829	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5830	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C5831	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5832	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5833	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C5834	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C5835	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C5836	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5837	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5838	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5840	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5842	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5844	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5845	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5846	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5847	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5848	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6028	1-165-887-91	CERAMIC CHIP	0.22uF	10%	6.3V
C6029	1-164-943-81	CERAMIC CHIP	0.01uF	10%	16V
C6032	1-165-887-91	CERAMIC CHIP	0.22uF	10%	6.3V
C6035	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C6401	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6402	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6403	1-165-887-91	CERAMIC CHIP	0.22uF	10%	6.3V

Ref. No.	Part No.	Description			
C6404	1-128-934-61	CERAMIC CHIP	0.33uF	10%	10V
C6405	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6406	1-127-772-81	CERAMIC CHIP	33000PF	10%	10V
C6407	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6408	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C6409	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C6410	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C6411	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C6412	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6413	1-165-897-11	TANTAL. CHIP	22uF	20%	10V
C6414	1-128-934-61	CERAMIC CHIP	0.33uF	10%	10V
C6415	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6416	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6417	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6418	1-128-934-61	CERAMIC CHIP	0.33uF	10%	10V
C6419	1-164-878-11	CERAMIC CHIP	150PF	5%	50V
C6420	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C6421	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6422	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6424	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C6425	1-165-884-91	CERAMIC CHIP	2.2uF	10%	6.3V
C6426	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6427	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6428	1-100-609-11	TANTAL. CHIP	220uF		5V
C6429	1-100-609-11	TANTAL. CHIP	220uF		5V
C6430	1-165-897-11	TANTAL. CHIP	22uF	20%	10V
C6431	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6601	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6602	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C6603	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C6604	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6605	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V
C6606	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6607	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6608	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6609	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6610	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6611	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6612	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6613	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6614	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6615	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6616	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6617	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6618	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6619	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6620	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6621	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6622	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6624	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6625	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6626	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6627	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6628	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V

< CONNECTOR >

CN1401	1-506-485-11	PIN, CONNECTOR 6P
CN2001	1-691-388-51	CONNECTOR, FFC/FPC 24P

Ref. No.	Part No.	Description
* CN2002	1-580-789-22	PIN, CONNECTOR (SMD) 6P
CN3201	1-580-756-21	PIN, CONNECTOR (SMD) 7P
* CN3600	1-566-524-61	CONNECTOR, FPC (ZIF) 8P
* CN3601	1-566-528-61	CONNECTOR, FPC (ZIF) 12P
CN4001	1-506-481-11	PIN, CONNECTOR 2P
CN4002	1-750-303-41	CONNECTOR, BOARD TO BOARD 20P
* CN4601	1-818-817-51	FFC/FPC CONNECTOR (ZIF) 40P
* CN4602	1-691-348-51	CONNECTOR, FFC/FPC (ZIF) 10P
* CN4604	1-564-013-11	PIN, CONNECTOR 3P
CN4605	1-580-057-11	PIN, CONNECTOR (SMD) 4P
* CN5401	1-695-320-21	PIN, CONNECTOR (1.5mm) (SMD) 2P
CN5402	1-785-848-91	CONNECTOR, BOARD TO BOARD 100P
CN5403	1-695-320-31	PIN, CONNECTOR (1.5mm) (SMD) 2P
CN6001	1-817-920-11	CONNECTOR, FPC (ZIF) 80P
* CN6401	1-764-007-11	PIN, CONNECTOR (SMD) 12P
		< DIODE >
D1003	8-719-027-76	DIODE 1SS357-TPH3
D1006	8-719-085-52	DIODE SBS806M-TL-E
D1008	6-500-813-01	DIODE MA2SD32008S0
D1009	6-500-813-01	DIODE MA2SD32008S0
D1010	8-719-069-28	DIODE 1SS400TE-61
D1011	6-500-813-01	DIODE MA2SD32008S0
D1203	8-719-085-52	DIODE SBS806M-TL-E
D1205	8-719-074-08	DIODE MA4ZD03001S0
D1401	8-719-067-56	DIODE MA112-TX
D1402	8-719-067-56	DIODE MA112-TX
D1403	8-719-067-56	DIODE MA112-TX
D1404	8-719-067-56	DIODE MA112-TX
D1405	8-719-067-56	DIODE MA112-TX
D1406	8-719-067-56	DIODE MA112-TX
D1407	8-719-073-28	DIODE MA729-(K8).S0
D1413	8-719-062-16	DIODE 01ZA8.2 (TPL3)
D1414	8-719-067-56	DIODE MA112-TX
D1415	8-719-067-56	DIODE MA112-TX
D1416	8-719-067-56	DIODE MA112-TX
D1418	8-719-062-16	DIODE 01ZA8.2 (TPL3)
D1419	8-719-067-56	DIODE MA112-TX
D1420	8-719-056-23	DIODE MA2S111-(K8).SO
D3001	6-500-275-01	DIODE RB751S-40TE61
D3002	6-500-275-01	DIODE RB751S-40TE61
D3003	6-500-818-01	DIODE KV1870RTL-G
D3600	8-719-067-56	DIODE MA112-TX
D3601	8-719-067-56	DIODE MA112-TX
D3602	8-719-056-23	DIODE MA2S111-(K8).SO
D4001	8-719-056-23	DIODE MA2S111-(K8).SO
D4002	8-719-056-23	DIODE MA2S111-(K8).SO
D4004	8-719-067-56	DIODE MA112-TX
D4005	8-719-067-56	DIODE MA112-TX
D4006	8-719-067-56	DIODE MA112-TX
D4603	8-719-069-28	DIODE 1SS400TE-61
D4604	6-500-813-01	DIODE MA2SD32008S0
D4605	6-500-813-01	DIODE MA2SD32008S0
D5001	8-719-069-28	DIODE 1SS400TE-61
D5401	8-719-066-98	DIODE RB051L-40TE25

Ref. No.	Part No.	Description
		< FUSE >
⚠F1001	1-576-406-21	FUSE (1.4A/32V)
⚠F1002	1-576-406-21	FUSE (1.4A/32V)
⚠F1003	1-576-406-21	FUSE (1.4A/32V)
⚠F1004	1-576-406-21	FUSE (1.4A/32V)
⚠F1005	1-576-406-21	FUSE (1.4A/32V)
⚠F1201	1-576-406-21	FUSE (1.4A/32V)
⚠F1202	1-576-406-21	FUSE (1.4A/32V)
⚠F1203	1-576-406-21	FUSE (1.4A/32V)
⚠F1204	1-576-406-21	FUSE (1.4A/32V)
⚠F1205	1-576-406-21	FUSE (1.4A/32V)
⚠F1401	1-576-864-21	FUSE (0.8A/72V)
⚠F1402	1-576-447-21	FUSE (630mA/24V)
⚠F1403	1-576-864-21	FUSE (0.8A/72V)
⚠F1404	1-576-864-21	FUSE (0.8A/72V)
⚠* F1405	1-576-980-21	FUSE (1.25A/72V)
⚠F1407	1-576-864-21	FUSE (0.8A/72V)
⚠F1408	1-576-864-21	FUSE (0.8A/72V)
⚠F1409	1-576-864-21	FUSE (0.8A/72V)
⚠F1410	1-576-864-21	FUSE (0.8A/72V)
⚠F1412	1-576-406-21	FUSE (1.4A/32V)
⚠F1419	1-576-447-21	FUSE (630mA/24V)
⚠F4601	1-576-447-21	FUSE (630mA/24V)
		< FERRITE BEAD >
FB1801	1-414-760-21	BEAD, FERRITE (CHIP) (1608)
FB1803	1-414-760-21	BEAD, FERRITE (CHIP) (1608)
FB1804	1-414-760-21	BEAD, FERRITE (CHIP) (1608)
FB2001	1-414-445-11	FERRITE, EMI (SMD) (1608)
FB2002	1-414-760-21	BEAD, FERRITE (CHIP) (1608)
FB2202	1-414-760-21	BEAD, FERRITE (CHIP) (1608)
FB2601	1-414-760-21	BEAD, FERRITE (CHIP) (1608)
FB2802	1-414-760-21	BEAD, FERRITE (CHIP) (1608)
FB2803	1-414-760-21	BEAD, FERRITE (CHIP) (1608)
FB3001	1-414-760-21	BEAD, FERRITE (CHIP) (1608)
FB3201	1-414-760-21	BEAD, FERRITE (CHIP) (1608)
FB3202	1-414-760-21	BEAD, FERRITE (CHIP) (1608)
FB4001	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB4002	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB4003	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB4004	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB4201	1-400-331-11	FERRITE, EMI (SMD) (1005)
FB4601	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB5000	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB6401	1-414-760-21	BEAD, FERRITE (CHIP) (1608)
		< FILTER >
FL5800	1-234-939-21	FILTER, EMI REMOVAL (SMD)
FL5801	1-234-939-21	FILTER, EMI REMOVAL (SMD)
FL5802	1-234-939-21	FILTER, EMI REMOVAL (SMD)
FL6000	1-234-939-21	FILTER, EMI REMOVAL (SMD)
FL6001	1-234-939-21	FILTER, EMI REMOVAL (SMD)
FL6002	1-234-939-21	FILTER, EMI REMOVAL (SMD)
		< IC >
IC1001	6-706-539-01	IC AN30205A-VB
IC1002	6-700-709-01	IC NJU7241F31 (TE2)

- Refer to page 5-1 for mark ⚠.

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Ref. No.	Part No.	Description
IC1003	8-759-642-45	IC TL1596CPWR
IC1004	6-707-676-01	IC S-8424AAPFT-TB-G
IC1005	6-707-674-01	IC S-812C36AUA-C2QT2G
IC1006	6-707-086-01	IC S-80851CNMC-B9CT2G
IC1201	6-706-539-01	IC AN30205A-VB
IC1203	6-708-133-01	IC TK72130CSCL-G
IC1401	8-759-530-57	IC TLV431ACDBV2
IC1402	6-708-385-01	IC SN0408028DBTR
IC1403	8-759-523-54	IC TC4001BF (EL, N)
* IC1404	6-709-650-01	IC NJU7751F05 (TE2)
* IC1407	6-709-648-01	IC NJM2823F (TE2)
IC1409	8-759-494-88	IC TC75S56F (TE85R)
* IC1801	6-709-775-01	IC S4DF006X02-Y070-K02K4C
IC1871	8-759-643-94	IC TC7SLU04FU (TE85R)
IC1872	6-701-979-01	IC TC7WB66FK (TE85R)
* IC1873	6-709-937-01	IC TC7SA34FU (T5RSONYF)
* IC1874	6-709-937-01	IC TC7SA34FU (T5RSONYF)
* IC1875	6-709-937-01	IC TC7SA34FU (T5RSONYF)
* IC1876	6-709-937-01	IC TC7SA34FU (T5RSONYF)
IC2001	6-708-108-01	IC TLS26A100PFBR
* IC2202	8-753-259-30	IC CXD3195GG-T6
* IC2501	6-709-478-01	IC K4X56323PG-8GC3T
IC2601	(Not supplied)	IC S29AL016D70BFI013
IC2801	8-753-231-06	IC CXD3185GG-T6
IC3001	6-704-695-01	IC uPD15002AFC-DN2-E2-A
IC3201	6-705-546-01	IC SN104286ZHZR
IC3600	8-759-422-21	IC NJM4580V (TE2)
IC3601	6-707-170-01	IC M61534FP
IC3602	8-759-471-38	IC AK4520A-VF-E2
IC3603	6-706-484-01	IC TC7SH04FU (T5RSOYJF)
IC3604	8-759-572-38	IC NJM2140R
IC3610	8-759-523-03	IC TC74HC4066AFT (EL)
IC3611	8-759-523-03	IC TC74HC4066AFT (EL)
* IC4003	6-709-454-01	IC S4LF033X0A-Y070
IC4201	6-703-328-01	IC MSM56V16160F-10T3
IC4202	(Not supplied)	IC S99-50031-33-ER
IC4403	6-705-177-01	IC M95640-WDW6TG
* IC4601	6-806-647-01	IC MB89097PFV-G-195-BND-ERE1
IC4602	8-759-640-84	IC BA6238AN
IC4603	8-759-491-47	IC TC74VHCT08AFT (EL)
IC4604	8-759-694-16	IC TC7WH241FK (TE85R)
IC4605	6-706-484-01	IC TC7SH04FU (T5RSOYJF)
* IC5000	6-806-698-01	IC MB91195ABGL-G-197-ERE1
IC5001	6-702-156-01	IC AK6510CM-E2
IC5401	8-759-339-61	IC LB1897D-E
IC5402	6-707-428-01	IC BD6639AGLV-E2
IC5403	8-759-327-61	IC LB8112V-TLM-E
IC5404	8-759-648-48	IC TC7W34FU (TE12R)
IC5405	8-759-492-30	IC MB3817PFV-G-BND
IC5406	6-705-337-01	IC TK11150CSCL-G
* IC5800	6-709-444-01	IC T6UL2XBG-0001 (E02)
IC5821	8-759-058-60	IC TC7SU04FU (TE85R)
IC5822	8-759-058-62	IC TC7S08FU (TE85R)
IC5823	8-759-698-31	IC TC7WH74FK (TE85R)
IC5824	8-759-680-48	IC TC7WH157FK (TE85R)
IC5825	6-707-479-01	IC AK4121AVF-E2
IC5826	8-759-680-48	IC TC7WH157FK (TE85R)
IC5827	8-759-698-31	IC TC7WH74FK (TE85R)
* IC5828	6-707-882-01	IC TC74VHC74FT (EKJ)
IC5829	6-706-484-01	IC TC7SH04FU (T5RSOYJF)
IC5831	8-759-598-43	IC TC7WH04FK (TE85R)
IC5835	8-759-524-19	IC TC74VHC164FT (EL)
IC5836	8-759-524-19	IC TC74VHC164FT (EL)
IC5837	8-759-524-19	IC TC74VHC164FT (EL)
IC5838	8-759-524-19	IC TC74VHC164FT (EL)
IC5839	6-706-487-01	IC TC7SH08FU (T5RSOYJF)
IC6002	6-705-338-01	IC TK11250CMCL-G
IC6401	6-701-555-01	IC AN2225NFHQBA
IC6601	6-701-740-01	IC MB87L4261LGA-G-ER

< COIL >

Ref. No.	Part No.	Description
L1003	1-419-354-21	INDUCTOR 22uH
L1004	1-419-354-21	INDUCTOR 22uH
L1005	1-419-354-21	INDUCTOR 22uH
L1006	1-419-354-21	INDUCTOR 22uH
L1007	1-419-354-21	INDUCTOR 22uH
L1008	1-419-354-21	INDUCTOR 22uH
L1009	1-419-354-21	INDUCTOR 22uH
L1010	1-419-354-21	INDUCTOR 22uH
L1013	1-469-549-21	INDUCTOR 1uH
L1014	1-469-549-21	INDUCTOR 1uH
L1015	1-469-549-21	INDUCTOR 1uH
L1016	1-469-549-21	INDUCTOR 1uH
L1017	1-469-555-21	INDUCTOR 10uH
L1018	1-469-549-21	INDUCTOR 1uH
L1019	1-469-555-21	INDUCTOR 10uH
L1020	1-469-553-21	INDUCTOR 4.7uH
L1021	1-469-549-21	INDUCTOR 1uH
L1022	1-469-555-21	INDUCTOR 10uH
L1023	1-469-555-21	INDUCTOR 10uH
L1024	1-469-555-21	INDUCTOR 10uH
L1025	1-400-588-11	INDUCTOR 10uH
L1026	1-400-588-11	INDUCTOR 10uH
L1205	1-419-354-21	INDUCTOR 22uH
L1206	1-419-354-21	INDUCTOR 22uH
L1207	1-419-354-21	INDUCTOR 22uH
L1208	1-416-670-51	INDUCTOR 33uH
L1209	1-419-354-21	INDUCTOR 22uH
L1211	1-419-354-21	INDUCTOR 22uH
L1214	1-469-555-21	INDUCTOR 10uH
L1216	1-469-549-21	INDUCTOR 1uH
L1217	1-469-549-21	INDUCTOR 1uH
L1218	1-469-549-21	INDUCTOR 1uH
L1219	1-469-555-21	INDUCTOR 10uH
L1222	1-469-555-21	INDUCTOR 10uH
L1223	1-469-555-21	INDUCTOR 10uH
L1404	1-416-606-11	INDUCTOR 47uH
L1406	1-416-606-11	INDUCTOR 47uH
L1408	1-416-668-31	INDUCTOR 10uH
L1410	1-409-535-41	INDUCTOR 100uH
L1411	1-456-500-11	INDUCTOR 10uH
L1801	1-400-675-11	INDUCTOR 10uH
L1802	1-400-676-11	INDUCTOR 22uH
L1803	1-400-588-11	INDUCTOR 10uH
L1804	1-400-676-11	INDUCTOR 22uH

Ref. No.	Part No.	Description	
L1805	1-400-588-11	INDUCTOR	10uH
L1871	1-469-549-21	INDUCTOR	1uH
L1872	1-469-526-91	INDUCTOR	22uH
L1873	1-469-526-91	INDUCTOR	22uH
L2001	1-400-588-11	INDUCTOR	10uH
L2002	1-400-588-11	INDUCTOR	10uH
L2003	1-400-588-11	INDUCTOR	10uH
L2201	1-400-675-11	INDUCTOR	10uH
L2203	1-400-676-11	INDUCTOR	22uH
L2204	1-400-676-11	INDUCTOR	22uH
L2205	1-400-676-11	INDUCTOR	22uH
L2206	1-400-676-11	INDUCTOR	22uH
L2207	1-400-135-11	INDUCTOR	1uH
L3001	1-469-570-11	INDUCTOR	10uH
L3002	1-469-570-11	INDUCTOR	10uH
L3003	1-469-546-21	INDUCTOR	0.56uH
L3005	1-469-570-11	INDUCTOR	10uH
L3006	1-469-570-11	INDUCTOR	10uH
L3007	1-469-570-11	INDUCTOR	10uH
L3008	1-469-570-11	INDUCTOR	10uH
L3009	1-469-570-11	INDUCTOR	10uH
L3201	1-469-570-11	INDUCTOR	10uH
L3600	1-469-058-11	INDUCTOR	22uH
L4001	1-412-029-11	INDUCTOR	10uH
L4201	1-414-754-11	INDUCTOR	10uH
L4202	1-414-754-11	INDUCTOR	10uH
L4601	1-414-754-11	INDUCTOR	10uH
L4602	1-412-029-11	INDUCTOR	10uH
L4603	1-409-529-41	INDUCTOR	10uH
L4604	1-414-754-11	INDUCTOR	10uH
L4605	1-400-588-11	INDUCTOR	10uH
L5401	1-469-967-21	INDUCTOR	10uH
L5402	1-469-967-21	INDUCTOR	10uH
L5403	1-400-588-11	INDUCTOR	10uH
L5404	1-419-353-21	INDUCTOR	10uH
L5405	1-416-669-11	INDUCTOR	22uH
L5821	1-414-398-11	INDUCTOR	10uH
L5822	1-414-398-11	INDUCTOR	10uH
L5823	1-469-058-11	INDUCTOR	22uH
L6401	1-469-967-21	INDUCTOR	10uH
L6402	1-469-967-21	INDUCTOR	10uH
L6403	1-412-939-11	INDUCTOR	1uH
L6404	1-469-967-21	INDUCTOR	10uH
L6601	1-469-967-21	INDUCTOR	10uH
L6602	1-469-967-21	INDUCTOR	10uH
L6603	1-469-967-21	INDUCTOR	10uH
		< LINE FILTER >	
LF3201	1-400-476-11	COMMON MODE CHOKE COIL	
		< LEAD PIN >	
LP001	(Not supplied)	PIN, LEAD	
		< TRANSISTOR >	
Q1002	8-729-037-63	TRANSISTOR	UN9115J-(TX).SO
Q1003	8-729-037-74	TRANSISTOR	UN9213J-(TX).SO
Q1004	6-550-675-01	TRANSISTOR	SSM6K30FE (TPLR3)

Ref. No.	Part No.	Description	
Q1005	6-550-675-01	TRANSISTOR	SSM6K30FE (TPLR3)
Q1006	6-550-675-01	TRANSISTOR	SSM6K30FE (TPLR3)
Q1007	6-550-675-01	TRANSISTOR	SSM6K30FE (TPLR3)
Q1008	6-550-675-01	TRANSISTOR	SSM6K30FE (TPLR3)
Q1009	6-550-675-01	TRANSISTOR	SSM6K30FE (TPLR3)
Q1010	6-550-675-01	TRANSISTOR	SSM6K30FE (TPLR3)
Q1011	6-550-675-01	TRANSISTOR	SSM6K30FE (TPLR3)
Q1014	6-550-713-01	TRANSISTOR	SCH2816-TL-E
Q1015	6-550-713-01	TRANSISTOR	SCH2816-TL-E
Q1016	6-550-713-01	TRANSISTOR	SCH2816-TL-E
Q1017	6-550-713-01	TRANSISTOR	SCH2816-TL-E
Q1018	6-550-713-01	TRANSISTOR	SCH2816-TL-E
Q1019	6-550-713-01	TRANSISTOR	SCH2816-TL-E
Q1020	6-550-713-01	TRANSISTOR	SCH2816-TL-E
Q1021	6-550-713-01	TRANSISTOR	SCH2816-TL-E
Q1022	8-729-049-25	TRANSISTOR	2SC5376F-B (TPL3)
Q1023	6-550-238-01	TRANSISTOR	DTA114EMT2L
Q1024	8-729-905-35	TRANSISTOR	2SC4081-R
Q1025	8-729-905-35	TRANSISTOR	2SC4081-R
Q1201	8-729-037-63	TRANSISTOR	UN9115J-(TX).SO
Q1202	8-729-037-74	TRANSISTOR	UN9213J-(TX).SO
Q1203	8-729-037-74	TRANSISTOR	UN9213J-(TX).SO
Q1205	6-550-675-01	TRANSISTOR	SSM6K30FE (TPLR3)
Q1206	6-550-675-01	TRANSISTOR	SSM6K30FE (TPLR3)
Q1207	6-550-675-01	TRANSISTOR	SSM6K30FE (TPLR3)
Q1209	6-550-675-01	TRANSISTOR	SSM6K30FE (TPLR3)
Q1210	6-550-675-01	TRANSISTOR	SSM6K30FE (TPLR3)
Q1211	6-550-675-01	TRANSISTOR	SSM6K30FE (TPLR3)
Q1215	6-550-713-01	TRANSISTOR	SCH2816-TL-E
Q1216	6-550-713-01	TRANSISTOR	SCH2816-TL-E
Q1217	6-550-713-01	TRANSISTOR	SCH2816-TL-E
Q1219	6-550-713-01	TRANSISTOR	SCH2816-TL-E
Q1220	6-550-713-01	TRANSISTOR	SCH2816-TL-E
Q1221	6-550-713-01	TRANSISTOR	SCH2816-TL-E
Q1222	8-729-049-25	TRANSISTOR	2SC5376F-B (TPL3)
Q1401	8-729-048-50	TRANSISTOR	2SK3018-T106
Q1402	8-729-041-23	TRANSISTOR	NDS356AP
Q1403	8-729-026-52	TRANSISTOR	2SA1576A-T106-R
Q1404	8-729-048-50	TRANSISTOR	2SK3018-T106
Q1405	8-729-048-50	TRANSISTOR	2SK3018-T106
Q1406	8-729-048-50	TRANSISTOR	2SK3018-T106
Q1407	8-729-041-23	TRANSISTOR	NDS356AP
Q1408	8-729-048-50	TRANSISTOR	2SK3018-T106
Q1409	8-729-048-50	TRANSISTOR	2SK3018-T106
Q1410	6-551-380-01	TRANSISTOR	SI4425BDY-T1
Q1411	8-729-905-35	TRANSISTOR	2SC4081-R
Q1412	8-729-905-35	TRANSISTOR	2SC4081-R
Q1415	8-729-048-50	TRANSISTOR	2SK3018-T106
Q1418	8-729-056-72	TRANSISTOR	MCH5805-TL-E
Q1419	8-729-037-72	TRANSISTOR	UN9211J-(TX).SO
Q1420	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R
Q1424	8-729-041-23	TRANSISTOR	NDS356AP
Q1425	8-729-048-11	TRANSISTOR	CPH3304-TL-E-S
Q1426	8-729-905-35	TRANSISTOR	2SC4081-R
Q1427	8-729-905-35	TRANSISTOR	2SC4081-R
Q1428	8-729-905-35	TRANSISTOR	2SC4081-R
* Q1429	6-551-522-01	TRANSISTOR	CPH6414-TL-E

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Ref. No.	Part No.	Description			
* Q1430	6-551-522-01	TRANSISTOR	CPH6414-TL-E		
* Q1431	6-551-522-01	TRANSISTOR	CPH6414-TL-E		
* Q1432	6-551-522-01	TRANSISTOR	CPH6414-TL-E		
Q2001	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q2002	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q2003	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q2004	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q2005	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q2007	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q2008	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q2009	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q3600	8-729-202-38	TRANSISTOR	2SC3326N-A		
Q3601	8-729-202-38	TRANSISTOR	2SC3326N-A		
Q3602	8-729-037-72	TRANSISTOR	UN9211J-(TX).SO		
Q3603	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q3604	6-550-232-01	TRANSISTOR	2SA2029T2LQ/R		
Q3605	8-729-037-72	TRANSISTOR	UN9211J-(TX).SO		
Q3606	8-729-905-35	TRANSISTOR	2SC4081-R		
Q3607	8-729-905-35	TRANSISTOR	2SC4081-R		
Q3608	8-729-905-35	TRANSISTOR	2SC4081-R		
Q3609	8-729-037-72	TRANSISTOR	UN9211J-(TX).SO		
Q3610	8-729-037-72	TRANSISTOR	UN9211J-(TX).SO		
Q3611	8-729-037-61	TRANSISTOR	UN9113J-(TX).SO		
Q3612	8-729-037-61	TRANSISTOR	UN9113J-(TX).SO		
Q3613	8-729-037-72	TRANSISTOR	UN9211J-(TX).SO		
Q3614	8-729-037-72	TRANSISTOR	UN9211J-(TX).SO		
Q3615	6-550-237-01	TRANSISTOR	2SC5658T2LQ/R		
Q3616	6-550-237-01	TRANSISTOR	2SC5658T2LQ/R		
Q3617	8-729-037-61	TRANSISTOR	UN9113J-(TX).SO		
Q3618	8-729-037-61	TRANSISTOR	UN9113J-(TX).SO		
Q3619	8-729-905-35	TRANSISTOR	2SC4081-R		
Q4002	6-550-237-01	TRANSISTOR	2SC5658T2LQ/R		
Q4003	6-550-119-01	TRANSISTOR	DTC144EMT2L		
Q4004	6-550-239-01	TRANSISTOR	DTA144EMT2L		
Q4005	8-729-053-54	TRANSISTOR	HN1A01FE-Y/GR (TPLR3)		
Q4006	6-550-174-01	TRANSISTOR	2SA2030T2L		
Q4007	8-729-041-23	TRANSISTOR	NDS356AP		
Q4008	8-729-037-72	TRANSISTOR	UN9211J-(TX).SO		
Q4601	8-729-421-22	TRANSISTOR	UN2211		
Q4602	8-729-421-22	TRANSISTOR	UN2211		
Q4603	8-729-421-22	TRANSISTOR	UN2211		
Q4604	8-729-037-74	TRANSISTOR	UN9213J-(TX).SO		
Q4605	8-729-421-22	TRANSISTOR	UN2211		
Q4606	8-729-041-23	TRANSISTOR	NDS356AP		
Q4607	8-729-037-72	TRANSISTOR	UN9211J-(TX).SO		
Q5401	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q5402	8-729-037-52	TRANSISTOR	2SD2216J-QR (TX).SO		
Q5403	8-729-424-02	TRANSISTOR	2SB709A-QRS-TX		
Q5404	8-729-048-75	TRANSISTOR	CPH3109-TL-E		
Q5405	8-729-037-52	TRANSISTOR	2SD2216J-QR (TX).SO		
Q6401	8-729-037-52	TRANSISTOR	2SD2216J-QR (TX).SO		
Q6603	8-729-054-48	TRANSISTOR	UP04601008S0		
		< RESISTOR >			
R1016	1-242-967-81	RES-CHIP	1	5%	1/16W
R1017	1-216-864-11	SHORT CHIP	0		
R1022	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R1029	1-216-829-11	METAL CHIP	4.7K	5%	1/10W

Ref. No.	Part No.	Description			
R1030	1-216-845-11	METAL CHIP	100K	5%	1/10W
R1032	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R1033	1-218-967-11	RES-CHIP	15K	5%	1/16W
R1034	1-218-971-11	RES-CHIP	33K	5%	1/16W
R1035	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R1036	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
R1038	1-218-971-11	RES-CHIP	33K	5%	1/16W
R1039	1-216-864-11	SHORT CHIP	0		
R1040	1-218-971-11	RES-CHIP	33K	5%	1/16W
R1041	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1042	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1043	1-216-817-11	METAL CHIP	470	5%	1/10W
R1044	1-218-446-11	METAL CHIP	1	5%	1/10W
R1046	1-218-869-11	METAL CHIP	8.2K	0.5%	1/10W
R1047	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1049	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R1050	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1052	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R1054	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
R1060	1-216-864-11	SHORT CHIP	0		
R1064	1-216-864-11	SHORT CHIP	0		
R1068	1-216-864-11	SHORT CHIP	0		
R1069	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1072	1-216-793-11	METAL CHIP	4.7	5%	1/10W
R1073	1-216-864-11	SHORT CHIP	0		
R1075	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R1076	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
R1081	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R1082	1-218-857-11	METAL CHIP	2.7K	0.5%	1/10W
R1084	1-216-845-11	METAL CHIP	100K	5%	1/10W
R1085	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1086	1-216-853-11	METAL CHIP	470K	5%	1/10W
R1087	1-216-809-11	METAL CHIP	100	5%	1/10W
R1088	1-218-891-11	METAL CHIP	68K	0.5%	1/10W
R1089	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R1090	1-218-446-11	METAL CHIP	1	5%	1/10W
R1092	1-218-446-11	METAL CHIP	1	5%	1/10W
R1093	1-218-446-11	METAL CHIP	1	5%	1/10W
R1096	1-216-864-11	SHORT CHIP	0		
R1097	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1098	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1099	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1100	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1101	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1102	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1103	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1104	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1105	1-216-809-11	METAL CHIP	100	5%	1/10W
R1107	1-216-809-11	METAL CHIP	100	5%	1/10W
R1108	1-216-846-11	METAL CHIP	120K	5%	1/10W
R1109	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
R1110	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R1111	1-216-836-11	METAL CHIP	18K	5%	1/10W
R1112	1-216-842-11	METAL CHIP	56K	5%	1/10W
R1113	1-216-828-11	METAL CHIP	3.9K	5%	1/10W
R1114	1-216-839-11	METAL CHIP	33K	5%	1/10W
R1205	1-242-967-81	RES-CHIP	1	5%	1/16W

Ref. No.	Part No.	Description			
R1207	1-216-864-11	SHORT CHIP	0		
R1208	1-216-864-11	SHORT CHIP	0		
R1210	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R1211	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R1212	1-217-806-11	RES-CHIP	1	5%	1/8W
R1214	1-216-864-11	SHORT CHIP	0		
R1215	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R1218	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R1219	1-216-845-11	METAL CHIP	100K	5%	1/10W
R1221	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R1223	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R1224	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1225	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1226	1-216-864-11	SHORT CHIP	0		
R1227	1-218-971-11	RES-CHIP	33K	5%	1/16W
R1229	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1230	1-218-971-11	RES-CHIP	33K	5%	1/16W
R1231	1-218-839-11	METAL CHIP	470	0.5%	1/10W
R1232	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R1233	1-216-864-11	SHORT CHIP	0		
R1234	1-218-446-11	METAL CHIP	1	5%	1/10W
R1235	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1236	1-216-797-11	METAL CHIP	10	5%	1/10W
R1241	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R1242	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1255	1-218-990-81	SHORT CHIP	0		
R1256	1-218-990-81	SHORT CHIP	0		
R1262	1-216-793-11	METAL CHIP	4.7	5%	1/10W
R1273	1-216-821-11	METAL CHIP	1K	5%	1/10W
R1274	1-218-701-11	METAL CHIP	2.4K	0.5%	1/10W
R1283	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1284	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R1285	1-216-846-11	METAL CHIP	120K	5%	1/10W
R1286	1-216-864-11	SHORT CHIP	0		
R1291	1-216-864-11	SHORT CHIP	0		
R1292	1-216-864-11	SHORT CHIP	0		
R1293	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1294	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1295	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1296	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1297	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1298	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1302	1-216-864-11	SHORT CHIP	0		
R1307	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R1402	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R1403	1-216-857-11	METAL CHIP	1M	5%	1/10W
R1404	1-218-981-11	RES-CHIP	220K	5%	1/16W
R1405	1-218-989-11	RES-CHIP	1M	5%	1/16W
R1407	1-216-845-11	METAL CHIP	100K	5%	1/10W
R1408	1-218-985-11	RES-CHIP	470K	5%	1/16W
R1409	1-216-845-11	METAL CHIP	100K	5%	1/10W
R1411	1-218-903-11	METAL CHIP	220K	0.5%	1/10W
R1412	1-218-981-11	RES-CHIP	220K	5%	1/16W
R1413	1-218-629-91	METAL CHIP	180	5%	1W
R1414	1-218-629-91	METAL CHIP	180	5%	1W
R1415	1-218-629-91	METAL CHIP	180	5%	1W
R1416	1-218-629-91	METAL CHIP	180	5%	1W
R1417	1-216-857-11	METAL CHIP	1M	5%	1/10W

Ref. No.	Part No.	Description			
R1418	1-218-629-91	METAL CHIP	180	5%	1W
R1419	1-218-629-91	METAL CHIP	180	5%	1W
R1420	1-218-629-91	METAL CHIP	180	5%	1W
R1421	1-218-629-91	METAL CHIP	180	5%	1W
R1422	1-218-629-91	METAL CHIP	180	5%	1W
R1423	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R1424	1-216-857-11	METAL CHIP	1M	5%	1/10W
R1425	1-218-887-11	METAL CHIP	47K	0.5%	1/10W
R1426	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1427	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1428	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1429	1-218-989-11	RES-CHIP	1M	5%	1/16W
R1430	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1431	1-218-989-11	RES-CHIP	1M	5%	1/16W
R1432	1-218-909-11	METAL CHIP	390K	0.5%	1/10W
R1433	1-218-911-11	METAL CHIP	470K	0.5%	1/10W
R1434	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R1435	1-216-857-11	METAL CHIP	1M	5%	1/10W
R1436	1-216-864-11	SHORT CHIP	0		
R1437	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R1438	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R1439	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R1440	1-218-903-11	METAL CHIP	220K	0.5%	1/10W
R1443	1-218-849-11	METAL CHIP	1.2K	0.5%	1/10W
R1447	1-218-853-11	METAL CHIP	1.8K	0.5%	1/10W
R1450	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R1451	1-216-814-11	METAL CHIP	270	5%	1/10W
R1453	1-216-820-11	METAL CHIP	820	5%	1/10W
R1454	1-216-864-11	SHORT CHIP	0		
R1455	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R1457	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R1458	1-216-852-11	METAL CHIP	390K	5%	1/10W
R1459	1-218-859-11	METAL CHIP	3.3K	0.5%	1/10W
R1460	1-218-911-11	METAL CHIP	470K	0.5%	1/10W
R1461	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R1462	1-218-891-11	METAL CHIP	68K	0.5%	1/10W
R1468	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R1471	1-218-891-11	METAL CHIP	68K	0.5%	1/10W
R1476	1-216-864-11	SHORT CHIP	0		
R1478	1-216-295-91	SHORT CHIP	0		
R1479	1-216-295-91	SHORT CHIP	0		
R1480	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1481	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1493	1-216-864-11	SHORT CHIP	0		
R1500	1-218-978-11	RES-CHIP	120K	5%	1/16W
R1501	1-216-846-11	METAL CHIP	120K	5%	1/10W
R1502	1-216-841-11	METAL CHIP	47K	5%	1/10W
R1503	1-216-841-11	METAL CHIP	47K	5%	1/10W
R1504	1-216-834-11	METAL CHIP	12K	5%	1/10W
R1505	1-218-989-11	RES-CHIP	1M	5%	1/16W
R1506	1-218-989-11	RES-CHIP	1M	5%	1/16W
R1507	1-218-989-11	RES-CHIP	1M	5%	1/16W
R1508	1-208-721-11	METAL CHIP	39K	0.5%	1/16W
R1509	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R1510	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R1511	1-218-987-11	RES-CHIP	680K	5%	1/16W
R1512	1-218-981-11	RES-CHIP	220K	5%	1/16W

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Ref. No.	Part No.	Description			
R1513	1-218-978-11	RES-CHIP	120K	5%	1/16W
R1514	1-216-846-11	METAL CHIP	120K	5%	1/10W
R1515	1-216-839-11	METAL CHIP	33K	5%	1/10W
R1516	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R1517	1-218-933-11	RES-CHIP	22	5%	1/16W
R1518	1-216-797-11	METAL CHIP	10	5%	1/10W
R1519	1-216-809-11	METAL CHIP	100	5%	1/10W
R1520	1-218-875-11	METAL CHIP	15K	0.5%	1/10W
R1521	1-216-864-11	SHORT CHIP	0		
R1522	1-216-864-11	SHORT CHIP	0		
R1525	1-218-875-11	METAL CHIP	15K	0.5%	1/10W
R1526	1-218-929-11	RES-CHIP	10	5%	1/16W
R1527	1-216-797-11	METAL CHIP	10	5%	1/10W
R1530	1-218-929-11	RES-CHIP	10	5%	1/16W
R1532	1-216-864-11	SHORT CHIP	0		
R1558	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1801	1-218-990-81	SHORT CHIP	0		
R1802	1-218-990-81	SHORT CHIP	0		
R1803	1-218-990-81	SHORT CHIP	0		
R1804	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1806	1-218-990-81	SHORT CHIP	0		
R1807	1-208-711-11	METAL CHIP	15K	0.5%	1/16W
R1808	1-218-990-81	SHORT CHIP	0		
R1809	1-218-990-81	SHORT CHIP	0		
R1810	1-218-939-11	RES-CHIP	68	5%	1/16W
R1811	1-218-941-81	RES-CHIP	100	5%	1/16W
R1812	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1813	1-218-941-81	RES-CHIP	100	5%	1/16W
R1814	1-218-990-81	SHORT CHIP	0		
R1815	1-218-990-81	SHORT CHIP	0		
R1817	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1818	1-218-935-11	RES-CHIP	33	5%	1/16W
R1819	1-218-990-81	SHORT CHIP	0		
R1820	1-208-697-11	METAL CHIP	3.9K	0.5%	1/16W
R1821	1-208-697-11	METAL CHIP	3.9K	0.5%	1/16W
R1822	1-218-935-11	RES-CHIP	33	5%	1/16W
R1823	1-218-973-11	RES-CHIP	47K	5%	1/16W
R1824	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1831	1-218-990-81	SHORT CHIP	0		
R1835	1-218-990-81	SHORT CHIP	0		
R1836	1-218-990-81	SHORT CHIP	0		
R1838	1-218-990-81	SHORT CHIP	0		
R1871	1-218-990-81	SHORT CHIP	0		
R1873	1-218-990-81	SHORT CHIP	0		
R1874	1-218-990-81	SHORT CHIP	0		
R1875	1-218-990-81	SHORT CHIP	0		
R1876	1-218-990-81	SHORT CHIP	0		
R1878	1-218-990-81	SHORT CHIP	0		
R1881	1-218-935-11	RES-CHIP	33	5%	1/16W
R1882	1-218-935-11	RES-CHIP	33	5%	1/16W
R1884	1-218-935-11	RES-CHIP	33	5%	1/16W
R1885	1-218-939-11	RES-CHIP	68	5%	1/16W
R1887	1-218-935-11	RES-CHIP	33	5%	1/16W
R1888	1-218-939-11	RES-CHIP	68	5%	1/16W
R1890	1-218-935-11	RES-CHIP	33	5%	1/16W
R1891	1-218-939-11	RES-CHIP	68	5%	1/16W
R1893	1-218-935-11	RES-CHIP	33	5%	1/16W
R1894	1-218-990-81	SHORT CHIP	0		

Ref. No.	Part No.	Description			
R1895	1-218-990-81	SHORT CHIP	0		
R2001	1-208-873-81	METAL CHIP	270	0.5%	1/16W
R2002	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2003	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2004	1-208-873-81	METAL CHIP	270	0.5%	1/16W
R2005	1-208-873-81	METAL CHIP	270	0.5%	1/16W
R2006	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2007	1-208-663-11	METAL CHIP	150	0.5%	1/16W
R2008	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2009	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2010	1-208-663-11	METAL CHIP	150	0.5%	1/16W
R2013	1-208-663-11	METAL CHIP	150	0.5%	1/16W
R2014	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2015	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2016	1-208-663-11	METAL CHIP	150	0.5%	1/16W
R2017	1-208-663-11	METAL CHIP	150	0.5%	1/16W
R2018	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2035	1-208-860-81	METAL CHIP	75	0.5%	1/16W
R2036	1-208-860-81	METAL CHIP	75	0.5%	1/16W
R2037	1-208-860-81	METAL CHIP	75	0.5%	1/16W
R2201	1-218-990-81	SHORT CHIP	0		
R2202	1-218-990-81	SHORT CHIP	0		
R2205	1-218-941-81	RES-CHIP	100	5%	1/16W
R2206	1-218-990-81	SHORT CHIP	0		
R2207	1-218-990-81	SHORT CHIP	0		
R2208	1-218-990-81	SHORT CHIP	0		
R2209	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2210	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2211	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2212	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2213	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2214	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2215	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2216	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2217	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2218	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2219	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2220	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2221	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2222	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2223	1-218-990-81	SHORT CHIP	0		
R2224	1-218-990-81	SHORT CHIP	0		
R2225	1-218-990-81	SHORT CHIP	0		
R2226	1-218-990-81	SHORT CHIP	0		
R2227	1-218-941-81	RES-CHIP	100	5%	1/16W
R2228	1-218-990-81	SHORT CHIP	0		
R2229	1-218-990-81	SHORT CHIP	0		
R2230	1-218-990-81	SHORT CHIP	0		
R2231	1-218-977-11	RES-CHIP	100K	5%	1/16W
R2237	1-218-990-81	SHORT CHIP	0		
R2238	1-218-990-81	SHORT CHIP	0		
R2239	1-218-990-81	SHORT CHIP	0		
R2241	1-218-990-81	SHORT CHIP	0		
R2242	1-218-990-81	SHORT CHIP	0		
R2243	1-218-990-81	SHORT CHIP	0		
R2244	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R2246	1-218-961-11	RES-CHIP	4.7K	5%	1/16W

Ref. No.	Part No.	Description			
R2248	1-218-941-81	RES-CHIP	100	5%	1/16W
R2501	1-218-990-81	SHORT CHIP	0		
R2601	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2801	1-218-941-81	RES-CHIP	100	5%	1/16W
R2803	1-218-990-81	SHORT CHIP	0		
R2804	1-218-973-11	RES-CHIP	47K	5%	1/16W
R2805	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2806	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2807	1-218-990-81	SHORT CHIP	0		
R2808	1-218-990-81	SHORT CHIP	0		
R2809	1-218-990-81	SHORT CHIP	0		
R2812	1-218-990-81	SHORT CHIP	0		
R2813	1-218-990-81	SHORT CHIP	0		
R3001	1-218-941-81	RES-CHIP	100	5%	1/16W
R3002	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3003	1-218-990-81	SHORT CHIP	0		
R3004	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3005	1-218-990-81	SHORT CHIP	0		
R3006	1-218-946-11	RES-CHIP	270	5%	1/16W
R3007	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R3008	1-218-941-81	RES-CHIP	100	5%	1/16W
R3013	1-218-990-81	SHORT CHIP	0		
R3015	1-218-990-81	SHORT CHIP	0		
R3018	1-218-990-81	SHORT CHIP	0		
R3019	1-218-990-81	SHORT CHIP	0		
R3020	1-218-990-81	SHORT CHIP	0		
R3021	1-218-941-81	RES-CHIP	100	5%	1/16W
R3022	1-218-941-81	RES-CHIP	100	5%	1/16W
R3023	1-218-990-81	SHORT CHIP	0		
R3201	1-218-938-11	RES-CHIP	56	5%	1/16W
R3202	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R3203	1-218-938-11	RES-CHIP	56	5%	1/16W
R3204	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R3205	1-218-938-11	RES-CHIP	56	5%	1/16W
R3206	1-218-938-11	RES-CHIP	56	5%	1/16W
R3207	1-208-702-11	METAL CHIP	6.2K	0.5%	1/16W
R3208	1-208-869-11	METAL CHIP	180	0.5%	1/16W
R3209	1-218-989-11	RES-CHIP	1M	5%	1/16W
R3210	1-218-990-81	SHORT CHIP	0		
R3211	1-218-990-81	SHORT CHIP	0		
R3212	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3213	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3214	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3215	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3216	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3217	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3218	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3219	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3220	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3221	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3222	1-218-990-81	SHORT CHIP	0		
R3223	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3224	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3225	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3226	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3600	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3601	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3602	1-218-959-11	RES-CHIP	3.3K	5%	1/16W

Ref. No.	Part No.	Description			
R3603	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R3604	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R3605	1-218-945-11	RES-CHIP	220	5%	1/16W
R3606	1-218-945-11	RES-CHIP	220	5%	1/16W
R3607	1-218-941-81	RES-CHIP	100	5%	1/16W
R3608	1-218-941-81	RES-CHIP	100	5%	1/16W
R3609	1-208-695-11	METAL CHIP	3.3K	0.5%	1/16W
R3610	1-208-711-11	METAL CHIP	15K	0.5%	1/16W
R3611	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3612	1-208-711-11	METAL CHIP	15K	0.5%	1/16W
R3613	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3614	1-208-695-11	METAL CHIP	3.3K	0.5%	1/16W
R3615	1-218-972-11	RES-CHIP	39K	5%	1/16W
R3616	1-218-973-11	RES-CHIP	47K	5%	1/16W
R3618	1-218-949-11	RES-CHIP	470	5%	1/16W
R3619	1-218-949-11	RES-CHIP	470	5%	1/16W
R3620	1-218-990-81	SHORT CHIP	0		
R3621	1-218-929-11	RES-CHIP	10	5%	1/16W
R3622	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3623	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R3624	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3625	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R3626	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3627	1-218-969-11	RES-CHIP	22K	5%	1/16W
R3628	1-218-969-11	RES-CHIP	22K	5%	1/16W
R3629	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3630	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3631	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3632	1-218-990-81	SHORT CHIP	0		
R3633	1-218-990-81	SHORT CHIP	0		
R3634	1-218-990-81	SHORT CHIP	0		
R3635	1-216-001-00	RES-CHIP	10	5%	1/10W
R3636	1-218-990-81	SHORT CHIP	0		
R3637	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3638	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3639	1-218-990-81	SHORT CHIP	0		
R3640	1-218-985-11	RES-CHIP	470K	5%	1/16W
R3641	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3642	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3643	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3648	1-218-990-81	SHORT CHIP	0		
R3649	1-218-941-81	RES-CHIP	100	5%	1/16W
R3650	1-218-941-81	RES-CHIP	100	5%	1/16W
R3651	1-218-941-81	RES-CHIP	100	5%	1/16W
R3652	1-218-941-81	RES-CHIP	100	5%	1/16W
R3653	1-218-935-11	RES-CHIP	33	5%	1/16W
R3654	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3655	1-218-973-11	RES-CHIP	47K	5%	1/16W
R3656	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3657	1-218-973-11	RES-CHIP	47K	5%	1/16W
R3658	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3659	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3662	1-208-910-11	METAL CHIP	9.1K	0.5%	1/16W
R3663	1-220-196-11	RES-CHIP	13K	5%	1/16W
R3665	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3666	1-218-964-11	RES-CHIP	8.2K	5%	1/16W
R3671	1-218-964-11	RES-CHIP	8.2K	5%	1/16W

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Ref. No.	Part No.	Description			
R3674	1-218-990-81	SHORT CHIP	0		
R3683	1-218-972-11	RES-CHIP	39K	5%	1/16W
R3684	1-218-973-11	RES-CHIP	47K	5%	1/16W
R3685	1-218-990-81	SHORT CHIP	0		
R3686	1-218-990-81	SHORT CHIP	0		
R3687	1-218-969-11	RES-CHIP	22K	5%	1/16W
R3688	1-218-969-11	RES-CHIP	22K	5%	1/16W
R3689	1-218-969-11	RES-CHIP	22K	5%	1/16W
R3690	1-218-969-11	RES-CHIP	22K	5%	1/16W
R3691	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3692	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3693	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3694	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3699	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R3700	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3701	1-208-905-11	METAL CHIP	5.6K	0.5%	1/16W
R3702	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R3703	1-218-977-11	RES-CHIP	100K	5%	1/16W
R3704	1-208-905-11	METAL CHIP	5.6K	0.5%	1/16W
R3705	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3706	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3707	1-218-969-11	RES-CHIP	22K	5%	1/16W
R3709	1-216-864-11	SHORT CHIP	0		
R4001	1-218-990-81	SHORT CHIP	0		
R4002	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4003	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4004	1-218-933-11	RES-CHIP	22	5%	1/16W
R4005	1-218-933-11	RES-CHIP	22	5%	1/16W
R4006	1-218-933-11	RES-CHIP	22	5%	1/16W
R4011	1-218-990-81	SHORT CHIP	0		
R4012	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4013	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4014	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4015	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4016	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4017	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4018	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4019	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4020	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4022	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4023	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4024	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4025	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4026	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4027	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4028	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4029	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4031	1-218-840-11	METAL CHIP	510	0.5%	1/10W
R4033	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4035	1-218-990-81	SHORT CHIP	0		
R4037	1-218-990-81	SHORT CHIP	0		
R4041	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4042	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4043	1-218-935-11	RES-CHIP	33	5%	1/16W
R4044	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4045	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4065	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4066	1-218-953-11	RES-CHIP	1K	5%	1/16W

Ref. No.	Part No.	Description			
R4067	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4068	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4069	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4070	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4071	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4072	1-218-973-11	RES-CHIP	47K	5%	1/16W
R4073	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R4074	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R4075	1-216-791-11	METAL CHIP	3.3	5%	1/10W
R4076	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R4077	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R4078	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R4079	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R4080	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R4081	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4082	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4083	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4086	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4087	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4090	1-218-990-81	SHORT CHIP	0		
R4091	1-218-990-81	SHORT CHIP	0		
R4092	1-218-990-81	SHORT CHIP	0		
R4093	1-218-941-81	RES-CHIP	100	5%	1/16W
R4094	1-218-941-81	RES-CHIP	100	5%	1/16W
R4095	1-218-941-81	RES-CHIP	100	5%	1/16W
R4096	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4097	1-218-973-11	RES-CHIP	47K	5%	1/16W
R4098	1-218-973-11	RES-CHIP	47K	5%	1/16W
R4099	1-218-973-11	RES-CHIP	47K	5%	1/16W
R4104	1-216-797-11	METAL CHIP	10	5%	1/10W
R4105	1-218-941-81	RES-CHIP	100	5%	1/16W
R4109	1-218-990-81	SHORT CHIP	0		
R4112	1-218-990-81	SHORT CHIP	0		
R4113	1-218-990-81	SHORT CHIP	0		
R4201	1-218-990-81	SHORT CHIP	0		
R4202	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4219	1-218-990-81	SHORT CHIP	0		
R4246	1-218-990-81	SHORT CHIP	0		
R4247	1-218-990-81	SHORT CHIP	0		
R4248	1-218-990-81	SHORT CHIP	0		
R4537	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4540	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4541	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4552	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4553	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4584	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4586	1-218-990-81	SHORT CHIP	0		
R4601	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4606	1-208-943-11	METAL CHIP	220K	0.5%	1/16W
R4607	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4608	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4609	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4613	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4614	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R4615	1-218-973-11	RES-CHIP	47K	5%	1/16W
R4616	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4619	1-218-965-11	RES-CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			
R4620	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4621	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4625	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4629	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4631	1-245-604-11	METAL CHIP	10M	5%	1/16W
R4632	1-218-990-81	SHORT CHIP	0		
R4635	1-218-973-11	RES-CHIP	47K	5%	1/16W
R4639	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4640	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4641	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4642	1-218-949-11	RES-CHIP	470	5%	1/16W
R4645	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4646	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4647	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4648	1-216-182-00	RES-CHIP	220	5%	1/8W
R4649	1-216-182-00	RES-CHIP	220	5%	1/8W
R4650	1-216-182-00	RES-CHIP	220	5%	1/8W
R4651	1-216-182-00	RES-CHIP	220	5%	1/8W
R4652	1-216-045-00	RES-CHIP	680	5%	1/10W
R4653	1-216-039-00	RES-CHIP	390	5%	1/10W
R4655	1-216-162-00	RES-CHIP	33	5%	1/8W
R4656	1-216-162-00	RES-CHIP	33	5%	1/8W
R4657	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4658	1-216-162-00	RES-CHIP	33	5%	1/8W
R4659	1-216-035-00	RES-CHIP	270	5%	1/10W
R4660	1-216-162-00	RES-CHIP	33	5%	1/8W
R4661	1-216-035-00	RES-CHIP	270	5%	1/10W
R4662	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4663	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4664	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4665	1-218-941-81	RES-CHIP	100	5%	1/16W
R4666	1-218-989-11	RES-CHIP	1M	5%	1/16W
R4667	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4668	1-218-941-81	RES-CHIP	100	5%	1/16W
R4676	1-218-977-11	RES-CHIP	100K	5%	1/16W
R4681	1-218-978-11	RES-CHIP	120K	5%	1/16W
R4687	1-218-990-81	SHORT CHIP	0		
R4693	1-218-990-81	SHORT CHIP	0		
R5006	1-218-941-81	RES-CHIP	100	5%	1/16W
R5007	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5008	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5009	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5010	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5018	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5019	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5020	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5065	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5110	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5113	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5137	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5140	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5151	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5154	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5159	1-218-985-11	RES-CHIP	470K	5%	1/16W
R5160	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5163	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5164	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5167	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5239	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5240	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5242	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5243	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5244	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5245	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5248	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5249	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5254	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5255	1-208-943-11	METAL CHIP	220K	0.5%	1/16W
R5256	1-208-931-11	METAL CHIP	68K	0.5%	1/16W
R5257	1-218-990-81	SHORT CHIP	0		
R5401	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5402	1-216-864-11	SHORT CHIP	0		
R5403	1-208-918-81	METAL CHIP	20K	0.5%	1/16W
R5404	1-208-709-11	METAL CHIP	12K	0.5%	1/16W
R5405	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5406	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5407	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5408	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5409	1-208-702-11	METAL CHIP	6.2K	0.5%	1/16W
R5411	1-216-864-11	SHORT CHIP	0		
R5414	1-218-985-11	RES-CHIP	470K	5%	1/16W
R5415	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5416	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5417	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5418	1-217-671-11	RES-CHIP	1	5%	1/10W
R5419	1-217-671-11	RES-CHIP	1	5%	1/10W
R5420	1-217-671-11	RES-CHIP	1	5%	1/10W
R5421	1-216-864-11	SHORT CHIP	0		
R5422	1-217-671-11	RES-CHIP	1	5%	1/10W
R5423	1-218-990-81	SHORT CHIP	0		
R5426	1-218-941-81	RES-CHIP	100	5%	1/16W
R5427	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R5428	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R5429	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R5433	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5436	1-216-864-11	SHORT CHIP	0		
R5438	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5440	1-220-877-81	METAL CHIP	20	0.5%	1/16W
R5442	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5444	1-218-967-11	RES-CHIP	15K	5%	1/16W
R5446	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5447	1-216-864-11	SHORT CHIP	0		
R5448	1-216-864-11	SHORT CHIP	0		
R5449	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5450	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5453	1-218-990-81	SHORT CHIP	0		
R5454	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R5455	1-218-967-11	RES-CHIP	15K	5%	1/16W
R5456	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5459	1-216-833-11	METAL CHIP	10K	5%	1/10W
R5460	1-217-671-11	RES-CHIP	1	5%	1/10W
R5461	1-217-671-11	RES-CHIP	1	5%	1/10W
R5462	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5463	1-216-864-11	SHORT CHIP	0		
R5465	1-216-833-11	METAL CHIP	10K	5%	1/10W

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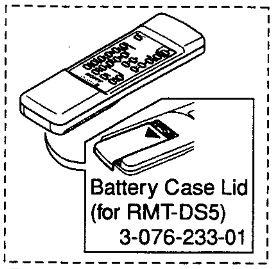
Ref. No.	Part No.	Description			
R5468	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R5469	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5470	1-216-833-11	METAL CHIP	10K	5%	1/10W
R5471	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5472	1-218-990-81	SHORT CHIP	0		
R5473	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R5474	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5475	1-218-973-11	RES-CHIP	47K	5%	1/16W
R5477	1-208-695-11	METAL CHIP	3.3K	0.5%	1/16W
R5478	1-208-695-11	METAL CHIP	3.3K	0.5%	1/16W
R5479	1-218-967-11	RES-CHIP	15K	5%	1/16W
R5480	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5481	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R5482	1-218-950-11	RES-CHIP	560	5%	1/16W
R5483	1-218-958-11	RES-CHIP	2.7K	5%	1/16W
R5484	1-218-990-81	SHORT CHIP	0		
R5485	1-208-699-11	METAL CHIP	4.7K	0.5%	1/16W
R5486	1-208-699-11	METAL CHIP	4.7K	0.5%	1/16W
R5487	1-218-950-11	RES-CHIP	560	5%	1/16W
R5488	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R5489	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5490	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5491	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5494	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5495	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5496	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5505	1-208-930-11	METAL CHIP	62K	0.5%	1/16W
R5508	1-208-923-11	METAL CHIP	33K	0.5%	1/16W
R5510	1-208-905-11	METAL CHIP	5.6K	0.5%	1/16W
R5511	1-218-953-11	RES-CHIP	1K	5%	1/16W
R5800	1-218-990-81	SHORT CHIP	0		
R5801	1-218-990-81	SHORT CHIP	0		
R5802	1-218-990-81	SHORT CHIP	0		
R5804	1-218-990-81	SHORT CHIP	0		
R5805	1-218-990-81	SHORT CHIP	0		
R5806	1-218-941-81	RES-CHIP	100	5%	1/16W
R5807	1-218-941-81	RES-CHIP	100	5%	1/16W
R5808	1-218-941-81	RES-CHIP	100	5%	1/16W
R5809	1-218-941-81	RES-CHIP	100	5%	1/16W
R5810	1-218-941-81	RES-CHIP	100	5%	1/16W
R5826	1-218-981-11	RES-CHIP	220K	5%	1/16W
R5832	1-216-797-11	METAL CHIP	10	5%	1/10W
R5836	1-218-990-81	SHORT CHIP	0		
R5837	1-218-990-81	SHORT CHIP	0		
R5838	1-218-990-81	SHORT CHIP	0		
R5839	1-218-990-81	SHORT CHIP	0		
R5840	1-218-941-81	RES-CHIP	100	5%	1/16W
R5846	1-218-954-11	RES-CHIP	1.2K	5%	1/16W
R5847	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5848	1-218-990-81	SHORT CHIP	0		
R5852	1-218-990-81	SHORT CHIP	0		
R5853	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5854	1-218-935-11	RES-CHIP	33	5%	1/16W
R5858	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5859	1-218-977-11	RES-CHIP	100K	5%	1/16W
R5860	1-218-941-81	RES-CHIP	100	5%	1/16W
R5861	1-218-941-81	RES-CHIP	100	5%	1/16W
R5862	1-218-941-81	RES-CHIP	100	5%	1/16W

Ref. No.	Part No.	Description			
R5867	1-218-990-81	SHORT CHIP	0		
R5871	1-218-941-81	RES-CHIP	100	5%	1/16W
R5873	1-218-941-81	RES-CHIP	100	5%	1/16W
R5874	1-218-941-81	RES-CHIP	100	5%	1/16W
R5877	1-218-941-81	RES-CHIP	100	5%	1/16W
R5879	1-218-941-81	RES-CHIP	100	5%	1/16W
R5881	1-218-941-81	RES-CHIP	100	5%	1/16W
R5889	1-218-990-81	SHORT CHIP	0		
R5893	1-218-941-81	RES-CHIP	100	5%	1/16W
R5894	1-218-941-81	RES-CHIP	100	5%	1/16W
R5895	1-218-935-11	RES-CHIP	33	5%	1/16W
R5896	1-218-941-81	RES-CHIP	100	5%	1/16W
R5897	1-218-941-81	RES-CHIP	100	5%	1/16W
R5898	1-218-941-81	RES-CHIP	100	5%	1/16W
R5899	1-218-941-81	RES-CHIP	100	5%	1/16W
R5906	1-218-941-81	RES-CHIP	100	5%	1/16W
R6003	1-218-990-81	SHORT CHIP	0		
R6009	1-218-935-11	RES-CHIP	33	5%	1/16W
R6010	1-218-935-11	RES-CHIP	33	5%	1/16W
R6011	1-218-935-11	RES-CHIP	33	5%	1/16W
R6012	1-218-935-11	RES-CHIP	33	5%	1/16W
R6013	1-218-935-11	RES-CHIP	33	5%	1/16W
R6014	1-218-935-11	RES-CHIP	33	5%	1/16W
R6015	1-218-935-11	RES-CHIP	33	5%	1/16W
R6016	1-218-935-11	RES-CHIP	33	5%	1/16W
R6017	1-218-935-11	RES-CHIP	33	5%	1/16W
R6018	1-218-935-11	RES-CHIP	33	5%	1/16W
R6019	1-218-935-11	RES-CHIP	33	5%	1/16W
R6020	1-218-935-11	RES-CHIP	33	5%	1/16W
R6021	1-218-935-11	RES-CHIP	33	5%	1/16W
R6022	1-218-935-11	RES-CHIP	33	5%	1/16W
R6023	1-218-935-11	RES-CHIP	33	5%	1/16W
R6024	1-218-935-11	RES-CHIP	33	5%	1/16W
R6025	1-218-935-11	RES-CHIP	33	5%	1/16W
R6026	1-218-935-11	RES-CHIP	33	5%	1/16W
R6027	1-218-935-11	RES-CHIP	33	5%	1/16W
R6028	1-218-935-11	RES-CHIP	33	5%	1/16W
R6029	1-218-935-11	RES-CHIP	33	5%	1/16W
R6030	1-218-935-11	RES-CHIP	33	5%	1/16W
R6031	1-218-935-11	RES-CHIP	33	5%	1/16W
R6032	1-218-935-11	RES-CHIP	33	5%	1/16W
R6033	1-218-935-11	RES-CHIP	33	5%	1/16W
R6034	1-218-935-11	RES-CHIP	33	5%	1/16W
R6035	1-218-935-11	RES-CHIP	33	5%	1/16W
R6036	1-218-935-11	RES-CHIP	33	5%	1/16W
R6037	1-218-935-11	RES-CHIP	33	5%	1/16W
R6038	1-218-935-11	RES-CHIP	33	5%	1/16W
R6039	1-218-935-11	RES-CHIP	33	5%	1/16W
R6040	1-218-935-11	RES-CHIP	33	5%	1/16W
R6041	1-218-935-11	RES-CHIP	33	5%	1/16W
R6042	1-218-935-11	RES-CHIP	33	5%	1/16W
R6043	1-218-935-11	RES-CHIP	33	5%	1/16W
R6044	1-218-935-11	RES-CHIP	33	5%	1/16W
R6045	1-218-990-81	SHORT CHIP	0		
R6401	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R6402	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R6403	1-218-941-81	RES-CHIP	100	5%	1/16W

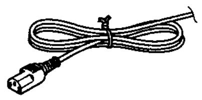
Ref. No.	Part No.	Description			
R6404	1-218-981-11	RES-CHIP	220K	5%	1/16W
R6405	1-220-884-81	METAL CHIP	39	0.5%	1/16W
R6406	1-220-883-81	METAL CHIP	36	0.5%	1/16W
R6407	1-220-884-81	METAL CHIP	39	0.5%	1/16W
R6408	1-220-883-81	METAL CHIP	36	0.5%	1/16W
R6409	1-220-884-81	METAL CHIP	39	0.5%	1/16W
R6410	1-220-883-81	METAL CHIP	36	0.5%	1/16W
R6411	1-218-971-11	RES-CHIP	33K	5%	1/16W
R6412	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R6413	1-218-971-11	RES-CHIP	33K	5%	1/16W
R6414	1-218-973-11	RES-CHIP	47K	5%	1/16W
R6415	1-218-953-11	RES-CHIP	1K	5%	1/16W
R6416	1-218-953-11	RES-CHIP	1K	5%	1/16W
R6417	1-218-949-11	RES-CHIP	470	5%	1/16W
R6418	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6419	1-218-953-11	RES-CHIP	1K	5%	1/16W
R6420	1-218-953-11	RES-CHIP	1K	5%	1/16W
R6421	1-218-953-11	RES-CHIP	1K	5%	1/16W
R6422	1-218-953-11	RES-CHIP	1K	5%	1/16W
R6424	1-208-860-81	METAL CHIP	75	0.5%	1/16W
R6425	1-208-860-81	METAL CHIP	75	0.5%	1/16W
R6426	1-208-860-81	METAL CHIP	75	0.5%	1/16W
R6601	1-218-937-11	RES-CHIP	47	5%	1/16W
R6604	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6605	1-218-951-11	RES-CHIP	680	5%	1/16W
R6606	1-218-965-11	RES-CHIP	10K	5%	1/16W
R6607	1-218-949-11	RES-CHIP	470	5%	1/16W
R6608	1-218-990-81	SHORT CHIP	0		
R6612	1-218-990-81	SHORT CHIP	0		
R6614	1-218-990-81	SHORT CHIP	0		
R6615	1-218-941-81	RES-CHIP	100	5%	1/16W
R6617	1-218-990-81	SHORT CHIP	0		
R6618	1-218-935-11	RES-CHIP	33	5%	1/16W
		< COMPOSITION CIRCUIT BLOCK >			
RB5000	1-234-381-21	RES, NETWORK	100K (1005X4)		
RB5001	1-234-381-21	RES, NETWORK	100K (1005X4)		
		< SWITCH >			
S4602	1-572-272-11	SWITCH, SLIDE (50i/60i)			
		< TEST PIN >			
TP4001	1-535-757-11	CHIP, CHECKER			
		< VIBRATOR >			
X1871	1-813-458-11	OSCILLATOR, CRYSTAL (55.631868MHz)			
X1872	1-813-457-11	OSCILLATOR, CRYSTAL (55.6875MHz)			
X3201	1-795-921-11	VIBRATOR, CRYSTAL (24.576MHz)			
X4601	1-760-458-21	VIBRATOR, CRYSTAL (32.768kHz)			
X4602	1-795-244-11	VIBRATOR, CERAMIC (10MHz)			
X5000	1-767-205-21	VIBRATOR, CRYSTAL (20MHz)			
X5820	1-795-921-11	VIBRATOR, CRYSTAL (24.576MHz)			
X6401	1-781-763-21	VIBRATOR, CRYSTAL (13.5MHZ)			

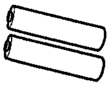
• E MODEL

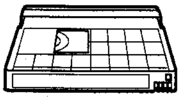
Checking supplied accessories.


Battery Case Lid
(for RMT-DS5)
3-076-233-01

Remote Commander
(RMT-DS5)
1-477-220-11


Power Cord
⚠ 1-551-812-11 (M25U/M25N)
⚠ 1-782-929-12 (M25P)
⚠ 1-783-481-42 (M25C)


Size AA Batteries
(not supplied)

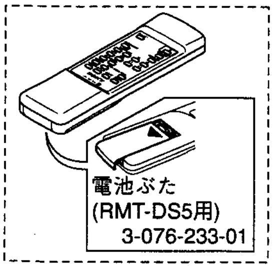

Cleaning Cassette
8-883-121-64

Other accessories

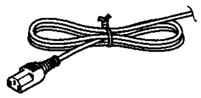
2-678-737-11	MANUAL, INSTRUCTION (ENGLISH) (M25U/M25N/M25E/M25P)
2-678-737-21	MANUAL, INSTRUCTION (FRENCH) (M25U/M25E)
2-678-737-31	MANUAL, INSTRUCTION (SPANISH, GERMAN, ITALIAN) (M25E)
2-678-737-41	MANUAL, INSTRUCTION (SIMPLIFIED CHINESE) (M25C)

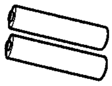
• J MODEL

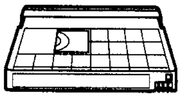
付属品


電池ぶた
(RMT-DS5用)
3-076-233-01

リモコン
(RMT-DS5)
1-477-220-11


電源ケーブル
⚠ 1-783-795-81


単3形乾電池
(供給せず)


クリーニングカセット
8-883-121-64

図面番号	部品コード	部品名
	2-678-737-01	取扱説明書(日本語)

• Refer to page 5-1 for mark ⚠.

6. ADJUSTMENTS

Link

Before starting adjustments

- Adjusting items when replacing main parts and boards
- List of service tools
- Information (Mechanical Section)

MECHANICAL SECTION ADJUSTMENTS

- PARTS REPLACEMENT AND PREPARATION FOR ADJUSTMENT
- PERIODIC CHECK
- PARTS REPLACEMENT
- CHECK AND ADJUSTMENT

VIDEO SECTION ADJUSTMENTS

- PREPARATIONS BEFORE ADJUSTMENTS
- INITIALIZATION OF 8, 9, A, B, C, D, 13, 18, 1A, 1B, 1C, 1D PAGE DATA
- SYSTEM CONTROL SYSTEM ADJUSTMENTS
- SERVO AND RF SYSTEM ADJUSTMENTS
- VIDEO SYSTEM ADJUSTMENTS
- LCD SYSTEM ADJUSTMENTS
- AUDIO SYSTEM ADJUSTMENTS

SERVICE MODE

- ADJUSTMENT REMOTE COMMANDER (RM-95)
- ADJUSTMENT REMOTE COMMANDER (NEW LANC JIG)
- DATA PROCESS
- SERVICE MODE

SECTION 6
ADJUSTMENTS

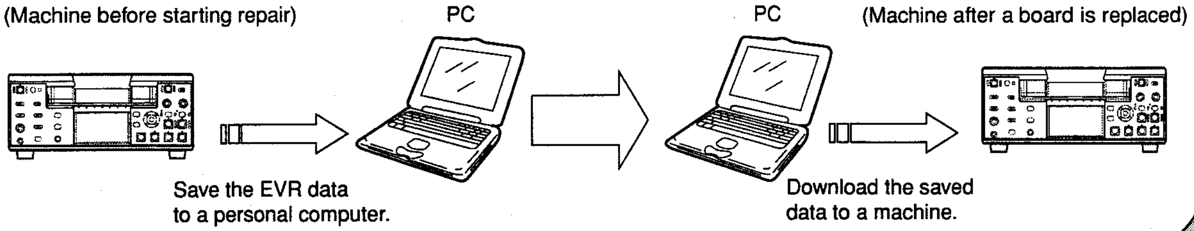
1. Before starting adjustment

EVR Data Re-writing Procedure When Replacing Board

The data that is stored in the repair board, is not necessarily correct.
Perform either procedure 1 or procedure 2 or procedure 3 when replacing board.

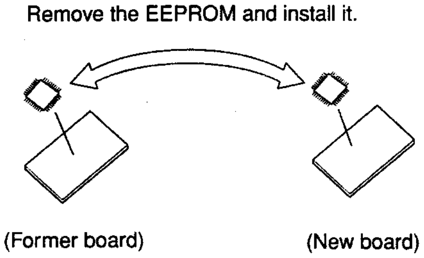
Procedure 1

Save the EVR data of the machine in which a board is going to be replaced. Download the saved data after a board is replaced.


(Machine before starting repair)
PC
PC
(Machine after a board is replaced)
Save the EVR data
to a personal computer.
Download the saved
data to a machine.

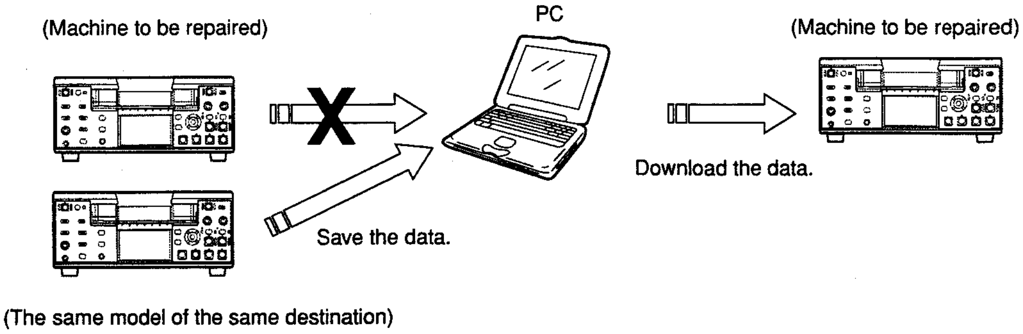
Procedure 2

Remove the EEPROM from the board of the machine that is going to be repaired. Install the removed EEPROM to the replaced board.


Remove the EEPROM and install it.
(Former board)
(New board)

Procedure 3

When the data cannot be saved due to defective EEPROM, or when the EEPROM cannot be removed or installed, save the data from the same model of the same destination, and download it.


(Machine to be repaired)
PC
(Machine to be repaired)
Download the data.
Save the data.
(The same model of the same destination)

After the EVR data is saved and downloaded, check the respective items of the EVR data.
(Refer to page 6-2 for the items to be checked)

1-1. Adjusting items when replacing main parts and boards

When replacing main parts, adjust the items indicated by ● in the following table.

Note 1: When replacing the drum assy or the mechanism deck, reset the data of page: 7, address: A8 to AB to "00". (Refer to "Record of Use check" of "6-3. SERVICE MODE")

Note 2: IC2601 (Flash memory) and IC4202 (Flash memory) on VD-036 board cannot be replaced.

Adjustment Section	Adjustment	Replaced part																
		Block replacement				Mounted part replacement												
		Mechanism deck (Note 1)	Mechanism deck M901 (Drum assembly) (Note 1)	Mechanism deck M903 (Capstan motor)	LCD block LCD901 (LCD panel)	RP-243 board IC2000 (REC/PB AMP)	VD-036 board IC1801 (Base band signal process, etc.)	VD-036 board IC3001 (DV signal process)	VD-036 board IC6401 (Video in/out)	VD-036 board IC2001 (Component out AMP)	PD-287 board IC6102 (LCD drive)	PD-287 board D6105 - 6107 (LCD Back light)	RP-243 board (COMPLETE)	VD-036 board (COMPLETE)	PD-287 board (COMPLETE)	VD-036 board IC4403 (EEPROM)	VD-036 board IC5001 (EEPROM)	Supporting
Mechanism	Tape path adj.	●	●	●										●				
Initialization of 8, 9, A, B, C, D, 13, 18, 1A, 1B, 1C, 1D page data	Initialization of 8, 9, C, 13, 18, 1C, 1D page data													●		●		
	Initialization of A, B, D, 1A, 1B page data													●			●	
System control	Node uniqe ID No. input													●		●		
Servo, RF	CAP FG duty adj.	●		●										●		●		●
	Switching position adj.	●	●	●										●		●		●
	Error rate check	●	●	●		●		●					●	●		●		●
Video	Origin oscillation check													●		●		
	S VIDEO OUT Y level adj.						●		●					●		●		
	S VIDEO OUT chroma level adj.						●		●					●		●		
	COMPONENT OUT adj. (D1 SMPTE)						●			●				●		●		
	COMPONENT OUT adj. (D1 BETACAM)						●			●				●		●		
LCD	LCD automatic adj.				●		●				●			●	●	●		
	V-COM adj.				●						●			●	●	●		
	Transmissive mode white balance adj.				●						●	●		●	●	●		
	Sample hold phase adj.				●						●			●	●	●		

Table 6-1-1

1-2. List of service tools

- Oscilloscope
- Digital voltmeter
- Audio generator
- Audio distortion meter
- Color monitor
- Frequency counter
- Audio attenuator
- Pattern generator
- Audio level meter
- Audio noise meter

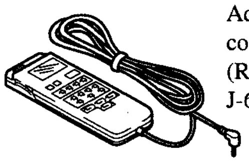
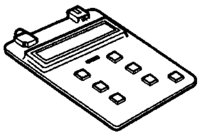
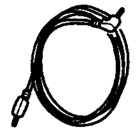
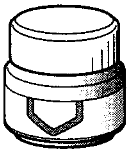
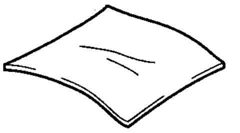
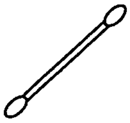
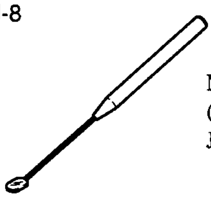
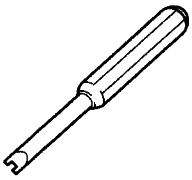
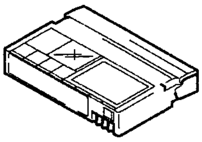
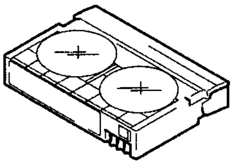
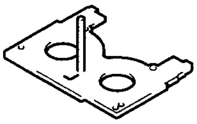
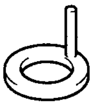
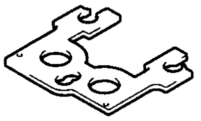
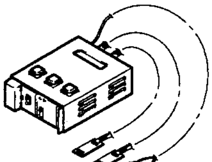
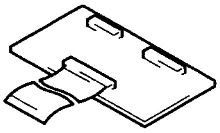
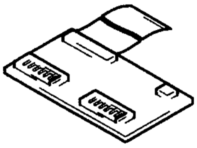
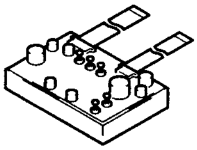
J-1  Adjustment remote commander (RM-95) J-6082-053-B	J-2  Adjustment remote commander (NEW LANC JIG) J-6082-565-A	J-3  LANC cable J-6082-442-A
J-4 Cleaning fluid 9-919-573-01	J-5  Grease (SUNCALL FG-87HSR) 7-640-006-08	J-6  Wiping cloth 7-741-900-53
J-7  Super fine applicator	J-8  Mirror (Small oval type) J-6080-840-A	J-9  Screwdraiver for the tape path J-6082-026-A
J-10  Tracking tape (XH2-1A1) 8-967-999-03	J-11  Mini DV torque cassette J-6082-360-A	J-12  Cassette reference plate J-6082-330-A
J-13  Reel reference plate J-6082-331-A	J-14  TG 2/7 preset plate J-6082-459-A	J-15  Mode Selector II J-6082-282-B
J-16  Relay board for tension regulator adjustment J-6082-461-A	J-17  Mode selector conversion board J-6082-460-A	J-18  Board for tension regulator adjustment J-6082-359-A

Fig. 6-1-1 (1)

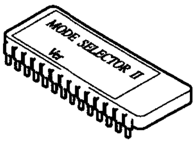
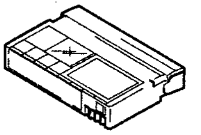
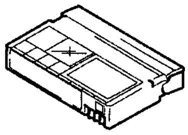
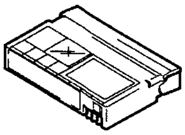
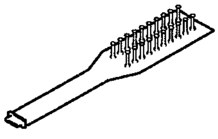
J-19  ROM for Mode selector (Cope with R mechanism) (Note) J-6082-314-E	J-20  SW/OL standard (XH2-3) 8-967-997-11	J-21  Audio operation check for NTSC (XH5-3) 8-967-997-51 for PAL (XH5-3P) 8-967-997-55
J-22  System operation check for NTSC (XH5-5) 8-967-997-61 for PAL (XH5-5P) 8-967-997-66	J-23  CPC-8 jig J-6082-388-A	

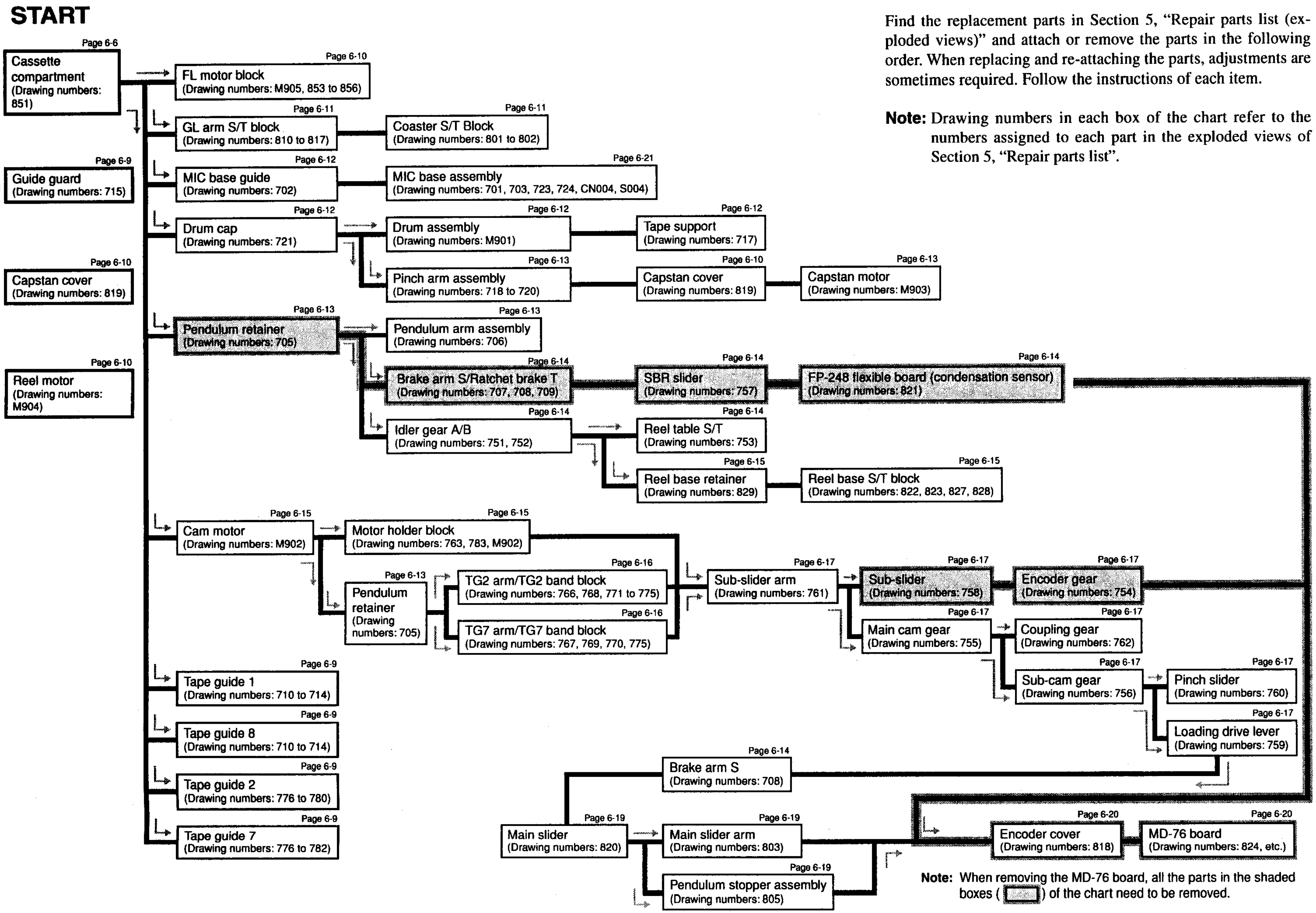
Fig. 6-1-1 (2)

Note: The ROM makes mode selector II's version up to use it with R mechanism.

1-3. Information (Mechanical Section)

Find the replacement parts in Section 5, "Repair parts list (exploded views)" and attach or remove the parts in the following order. When replacing and re-attaching the parts, adjustments are sometimes required. Follow the instructions of each item.

Note: Drawing numbers in each box of the chart refer to the numbers assigned to each part in the exploded views of Section 5, "Repair parts list".


START
Page 6-6
Cassette compartment (Drawing numbers: 851)
Page 6-9
Guide guard (Drawing numbers: 715)
Page 6-10
Capstan cover (Drawing numbers: 819)
Page 6-10
Reel motor (Drawing numbers: M904)
Page 6-10
FL motor block (Drawing numbers: M905, 853 to 856)
Page 6-11
GL arm S/T block (Drawing numbers: 810 to 817)
Page 6-11
Coaster S/T Block (Drawing numbers: 801 to 802)
Page 6-12
MIC base guide (Drawing numbers: 702)
Page 6-21
MIC base assembly (Drawing numbers: 701, 703, 723, 724, CN004, S004)
Page 6-12
Drum cap (Drawing numbers: 721)
Page 6-12
Drum assembly (Drawing numbers: M901)
Page 6-12
Tape support (Drawing numbers: 717)
Page 6-13
Pinch arm assembly (Drawing numbers: 718 to 720)
Page 6-10
Capstan cover (Drawing numbers: 819)
Page 6-13
Capstan motor (Drawing numbers: M903)
Page 6-13
Pendulum retainer (Drawing numbers: 705)
Page 6-13
Pendulum arm assembly (Drawing numbers: 706)
Page 6-14
Brake arm S/Ratchet brake T (Drawing numbers: 707, 708, 709)
Page 6-14
SBR slider (Drawing numbers: 757)
Page 6-14
FP-248 flexible board (condensation sensor) (Drawing numbers: 821)
Page 6-14
Idler gear A/B (Drawing numbers: 751, 752)
Page 6-14
Reel table S/T (Drawing numbers: 753)
Page 6-15
Reel base retainer (Drawing numbers: 829)
Page 6-15
Reel base S/T block (Drawing numbers: 822, 823, 827, 828)
Page 6-15
Cam motor (Drawing numbers: M902)
Page 6-15
Motor holder block (Drawing numbers: 763, 783, M902)
Page 6-13
Pendulum retainer (Drawing numbers: 705)
Page 6-16
TG2 arm/TG2 band block (Drawing numbers: 766, 768, 771 to 775)
Page 6-16
TG7 arm/TG7 band block (Drawing numbers: 767, 769, 770, 775)
Page 6-17
Sub-slider arm (Drawing numbers: 761)
Page 6-17
Sub-slider (Drawing numbers: 758)
Page 6-17
Encoder gear (Drawing numbers: 754)
Page 6-17
Main cam gear (Drawing numbers: 755)
Page 6-17
Coupling gear (Drawing numbers: 762)
Page 6-17
Sub-cam gear (Drawing numbers: 756)
Page 6-17
Pinch slider (Drawing numbers: 760)
Page 6-17
Loading drive lever (Drawing numbers: 759)
Page 6-9
Tape guide 1 (Drawing numbers: 710 to 714)
Page 6-9
Tape guide 8 (Drawing numbers: 710 to 714)
Page 6-9
Tape guide 2 (Drawing numbers: 776 to 780)
Page 6-9
Tape guide 7 (Drawing numbers: 776 to 782)
Page 6-14
Brake arm S (Drawing numbers: 708)
Page 6-19
Main slider (Drawing numbers: 820)
Page 6-19
Main slider arm (Drawing numbers: 803)
Page 6-19
Pendulum stopper assembly (Drawing numbers: 805)
Page 6-20
Encoder cover (Drawing numbers: 818)
Page 6-20
MD-76 board (Drawing numbers: 824, etc.)

Note: When removing the MD-76 board, all the parts in the shaded boxes (▨) of the chart need to be removed.

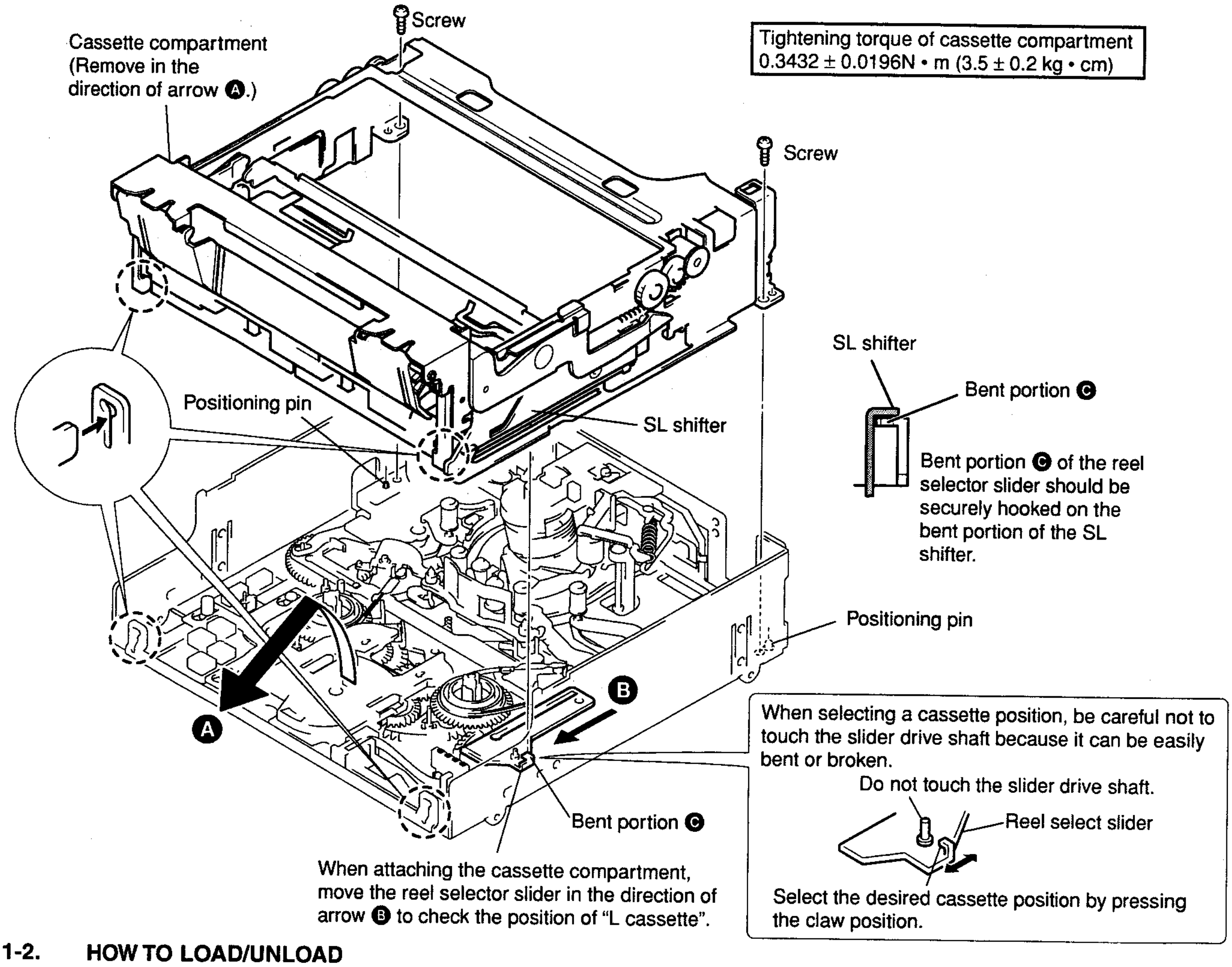
6-1. MECHANICAL SECTION ADJUSTMENTS

6-1-1. PARTS REPLACEMENT AND PREPARATION FOR ADJUSTMENT

1-1. ASSEMBLY/DISASSEMBLY OF CASSETTE COMPARTMENT

For details on disassembling the mechanism deck (R mechanism), refer to the Service Manual of the main unit in which the R mechanism is mounted.

Before attaching or removing the cassette compartment, check the position of "L cassette".


Screw
Cassette compartment
(Remove in the direction of arrow Ⓐ.)
Screw
SL shifter
Bent portion Ⓒ
Positioning pin
SL shifter
Positioning pin
Ⓑ
Ⓐ
Bent portion Ⓒ
Do not touch the slider drive shaft.
Reel select slider

Tightening torque of cassette compartment
0.3432 ± 0.0196N • m (3.5 ± 0.2 kg • cm)

Bent portion Ⓒ of the reel selector slider should be securely hooked on the bent portion of the SL shifter.

When selecting a cassette position, be careful not to touch the slider drive shaft because it can be easily bent or broken.

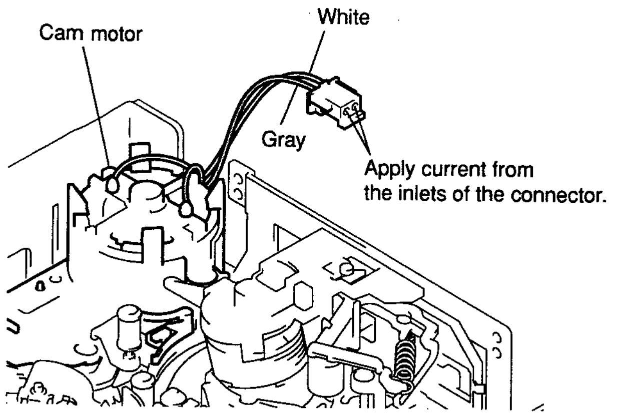
Select the desired cassette position by pressing the claw position.

When attaching the cassette compartment, move the reel selector slider in the direction of arrow Ⓑ to check the position of "L cassette".

1-2. HOW TO LOAD/UNLOAD

[Using the regulated power supply]

Note: Make sure to remove the connector of the cam motor from the board of the main unit and apply +5V current.


White
Cam motor
Gray
Apply current from the inlets of the connector.

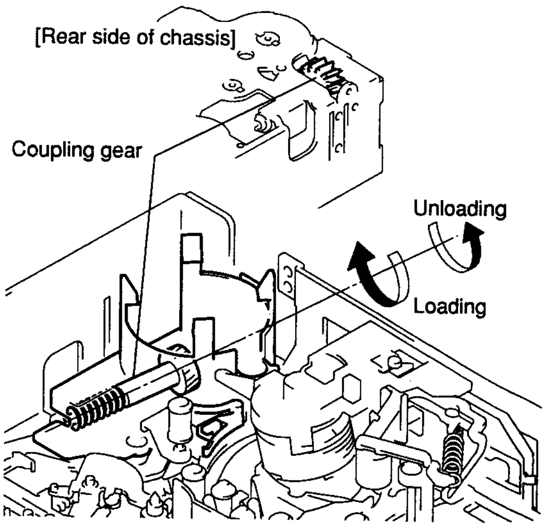
Loading : Apply positive polarity (+) of power supply to the gray wire and negative polarity (–) of power supply to the white wire.

Unloading : Apply negative polarity (–) of power supply to the gray wire and positive polarity (+) of power supply to the white wire.

[Manual: No cam motor]

Note: Remove the cam motor from the motor holder while referring to "Information" on page 6-5.

Rotate the coupling gear by hand to load or unload.


[Rear side of chassis]
Coupling gear
Unloading
Loading

1-3. About Mode Selector II

• About Mode Selector II

3-1. OUTLINE

This unit is a mechanism drive tool which supplements the maintenance of each mechanism deck. Its functions are described below.

1. Manual test
A mode which drives the motor only while the switch is ON. It enables the operator to control the motor as desired.

2. Step test
A mode which drives the motor until the current condition detected by the sensor changes to another condition. It enables the movements made by the motor in each operation to be controlled while being detected.

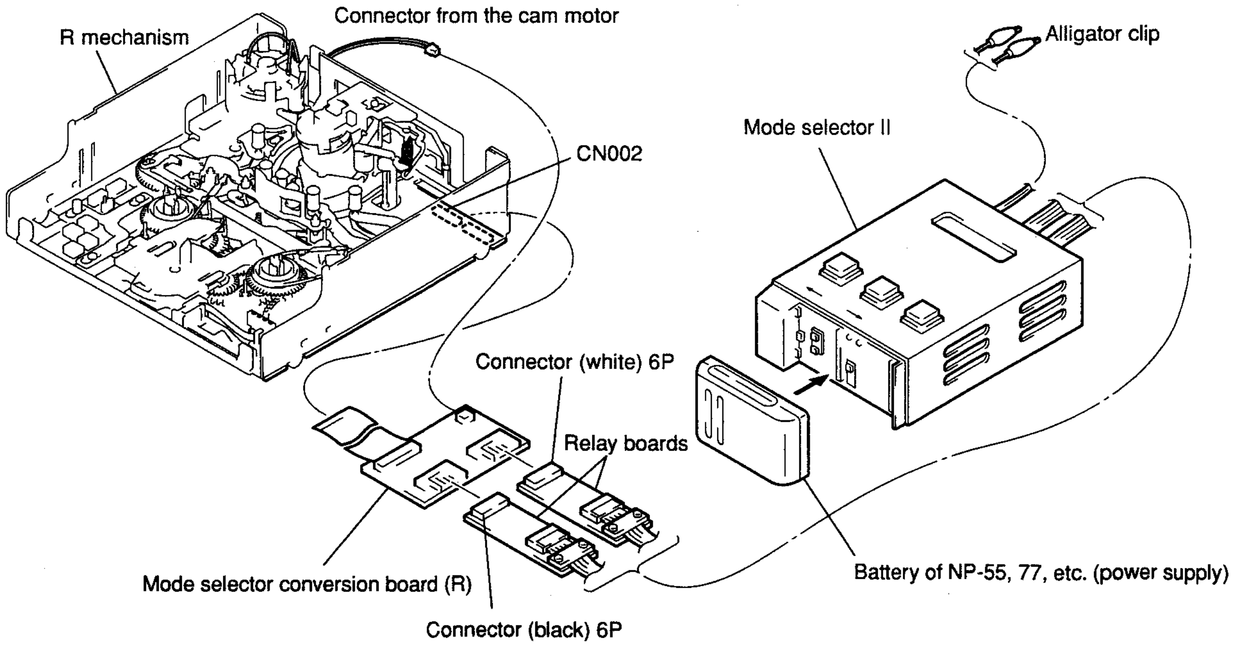
3. Auto test
A mode that checks if the mechanism operates normally according to the condition shift table recorded in the unit for each mechanism deck. All the conditions of the decks are checked through a series of operations.
An error message is displayed and operations are stopped if incorrect shifts and conditions are detected.

3-2. MECHANISM CONDITION (POSITION) SHIFTING ORDER LIST

After selecting the mechanism deck, select one of the two test modes other than the auto test, and press the RVS or FF button to specify the mechanism state (position).

MD name Code					R mechanism
A	B	C	D		
0	1	1	1	1	ULE
0	0	1	1	2	DEW
1	0	1	1	3	LE
1	0	0	1	4	REW
1	0	1	0	5	FF
1	1	1	0	6	STOP
1	1	0	1	7	FWD / RVS

3-3. MODE SELECTOR II CONNECTION


R mechanism
Connector from the cam motor
CN002
Alligator clip
Mode selector II
Connector (white) 6P
Relay boards
Battery of NP-55, 77, etc. (power supply)
Mode selector conversion board (R)
Connector (black) 6P

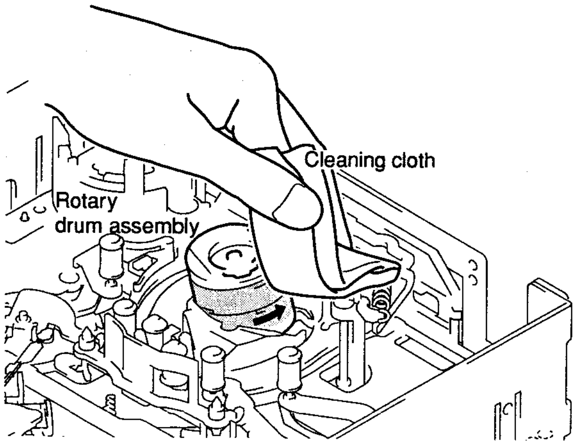
6-1-2. PERIODIC CHECK

- Carry out the following maintenance and periodic checks not only to fully display the functions and performance of the set, but also for the equipment and tape. After replacing, service the set as follows, regardless of the length of use.

2-1. CLEANING OF ROTARY DRUM ASSEMBLY

1. Press a wiping cloth (J-6) moistened with cleaning fluid (J-4) against the rotary drum assembly gently, and clean it while rotating the rotary drum assembly slowly with your finger in the counterclockwise direction.

Note: Do not rotate the motor on power or rotate the rotary drum assembly in the clockwise direction with your finger. The head tip will also be damaged if the wiping cloth is moved perpendicularly against it. Therefore, be sure to follow the above instructions when cleaning the rotary drum assembly.

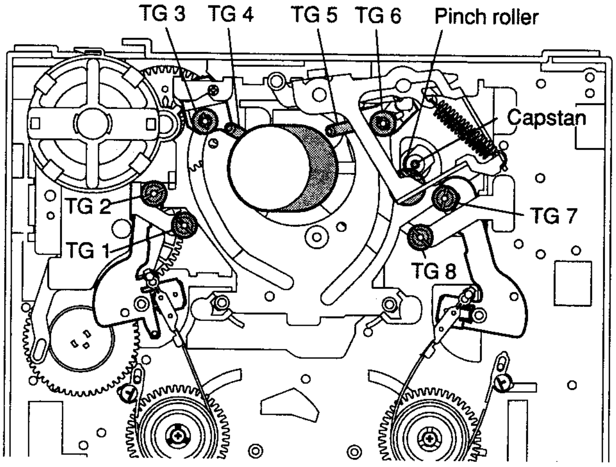


2-2. CLEANING OF TAPE PATH SYSTEM

1. Clean the tape path systems (TG1 to TG8 and capstan) and the lower drum using a super fine applicator (J-7) moistened with cleaning fluid.

Note: Make sure that no oil or grease of the link mechanisms sticks to the super fine applicator (J-7).

Note: Do not use a applicator moistened with alcohol to the other guide cleaning. But clean the pinch roller using alcohol.



2-3. PERIODIC CHECKS

Location of Maintenance and Check		Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of the oil.
	Cleaning and degaussing of rotary drum assembly	○	○	○	○	○	○	○	○	○	○	Be careful of the oil.
Driving System	Gear	–	◎	–	◎	–	◎	–	◎	–	◎	Make sure that no oil gets on the tape path surface.
	Cam motor (worm block)	–	◎	–	◎	–	◎	–	◎	–	◎	X-3946-702-1 (M902)
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	–	☆	–	☆	–	☆	–	☆	–	☆	
	Brake system	–	☆	–	☆	–	☆	–	☆	–	☆	
	FWD/RVS torque measurement	–	☆	–	☆	–	☆	–	☆	–	☆	

○ : Cleaning ◎: Appling grease ☆: Confirmation

Note: When overhauling, refer to the checks above and replace parts.

Note: Greasing

Always use the specified grease (SUNCALL FG-87HSR Part No. 7-640-006-08). If the viscosity differs, various problems may occur.

6-1-3. PARTS REPLACEMENT

• Precaution

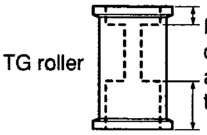
For details on disassembling the cabinets, boards and other parts, refer to "Section 2, Disassembly". For details on replacing parts (disassembly, assembly) of the mechanism deck, refer to "Information" on page 6-5.

3-1. TAPE GUIDE 1/8 AND GUIDE GUARD

Disassembly/Assembly

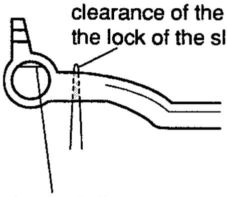
When the tape guide 1/8 is replaced or attached, perform each adjustment from Adjustment Start -2 of the flowchart on page 6-23.

To attach or remove the tape guide, use the screwdriver for the tape path (J-9). When attaching the TG rollers, check the upward and downward directions and attach them to the chassis shaft.



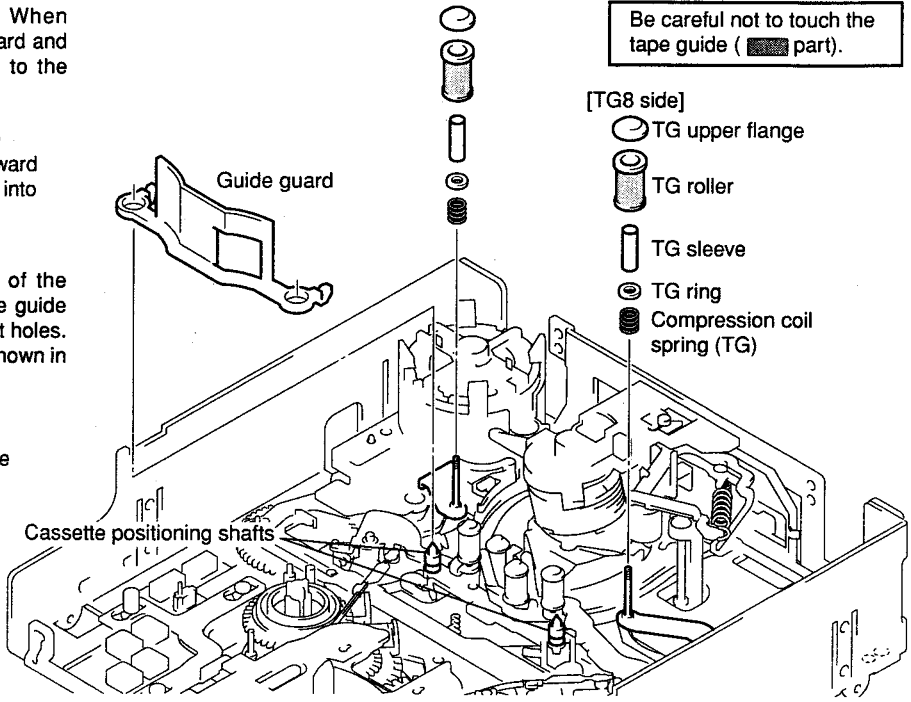
Face the side of the deepest hole downward and insert the roller into the shaft.

The guide guard is fixed at each slit of the cassette positioning shaft. To attach the guide guard, only insert it into the right and left holes. To remove it, use a pair of tweezers as shown in the figure below.



Insert a pair of tweezers into the clearance of the chassis to release the lock of the slit.

Lock of slit


Guide guard
Cassette positioning shafts
[TG8 side]
TG upper flange
TG roller
TG sleeve
TG ring
Compression coil spring (TG)

[TG1 side]
(The components are the same as on the TG8 side.)

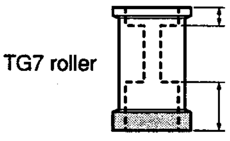
Be careful not to touch the tape guide (▨ part).

3-2. TAPE GUIDE 2/7

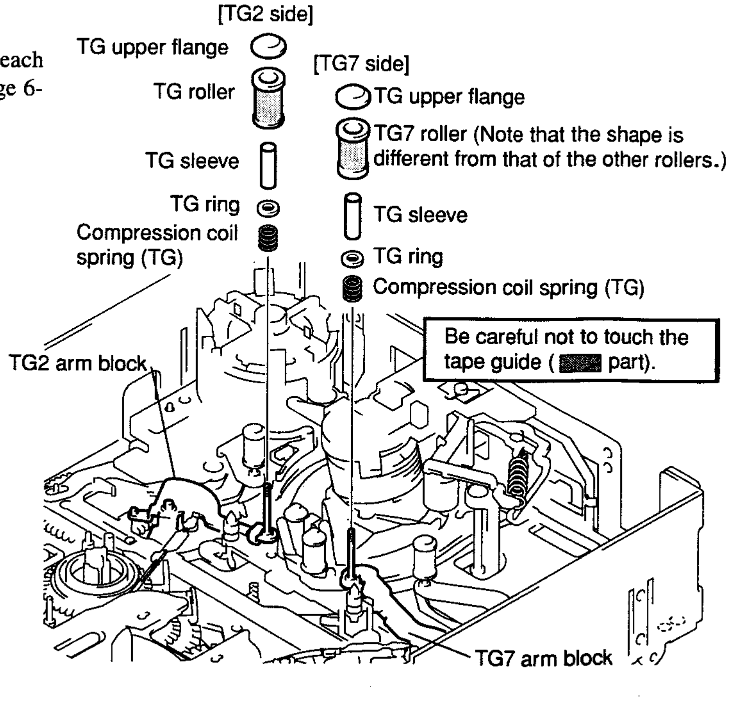
Disassembly/Assembly

When the tape guide 2/7 is replaced or attached, perform each adjustment from Adjustment Start -3 of the flowchart on page 6-23.

To attach or remove the tape guide, use the screwdriver for the tape path (J-9). When attaching the TG rollers, check the upward and downward directions and that the TG roller to be attached to the TG7 side is exclusively for the TG7 side. Then attach the TG rollers to the chassis shaft.



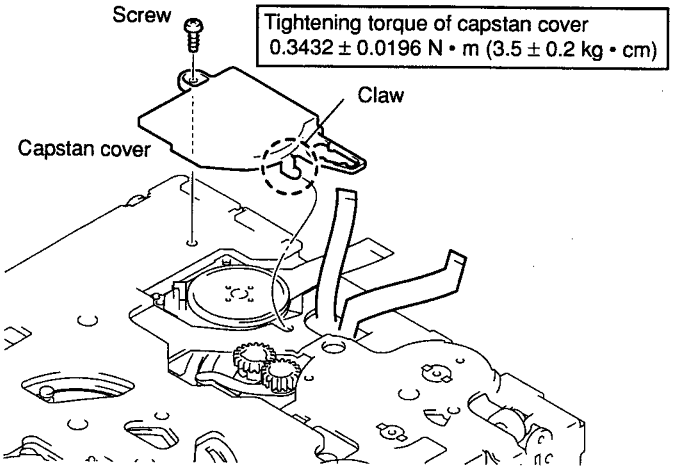
Face the side of the deepest hole downward and insert the roller into the shaft.
The lower flange of the TG7 roller is thicker than those of the TG1, 2, and 8 rollers.


[TG2 side]
TG upper flange
TG roller
TG sleeve
TG ring
Compression coil spring (TG)
[TG7 side]
TG upper flange
TG7 roller (Note that the shape is different from that of the other rollers.)
TG sleeve
TG ring
Compression coil spring (TG)
TG2 arm block
TG7 arm block

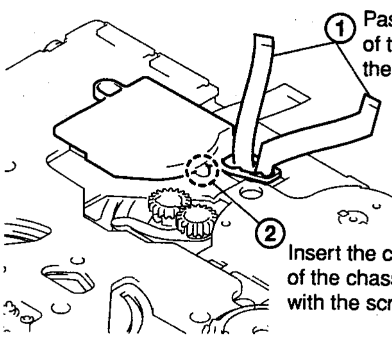
Be careful not to touch the tape guide (▨ part).

3-3. CAPSTAN COVER

Disassembly/Assembly


Screw
Claw
Capstan cover

Tightening torque of capstan cover
0.3432 ± 0.0196 N • m (3.5 ± 0.2 kg • cm)



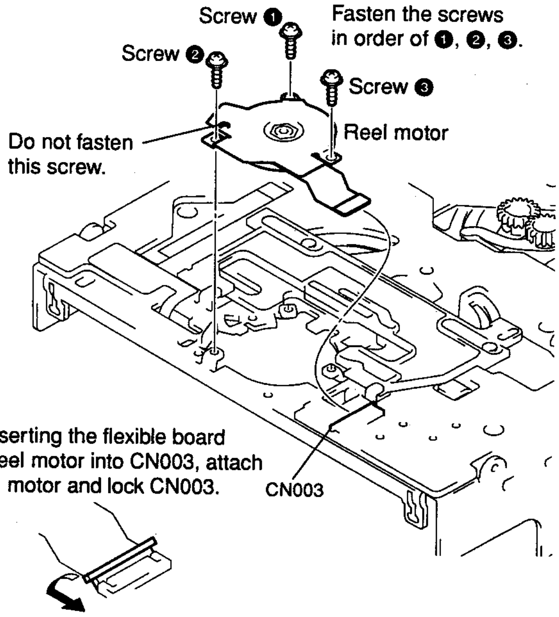
① Pass the two flexible boards of the drum assembly through the hole.

② Insert the claw into the long hole of the chassis and fix the cover with the screw.

3-4. REEL MOTOR

Disassembly/Assembly

Tightening torque of reel motor
0.0686 ± 0.0098 N • m (0.7 ± 0.1 kg • cm)

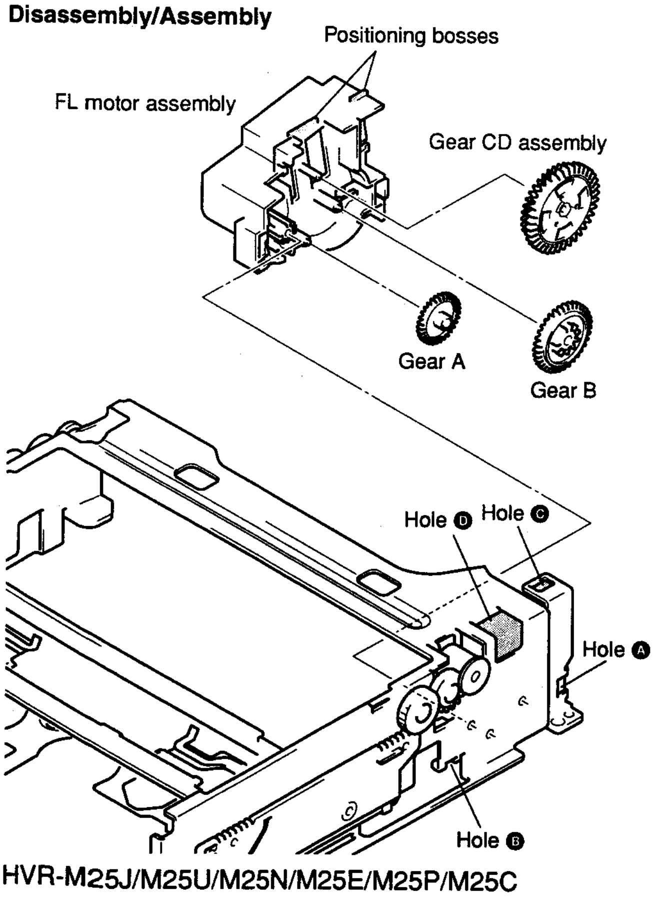

Screw ❶
Screw ❷
Screw ❸
Reel motor
Do not fasten this screw.
CN003

Fasten the screws in order of ❶, ❷, ❸.

After inserting the flexible board of the reel motor into CN003, attach the reel motor and lock CN003.

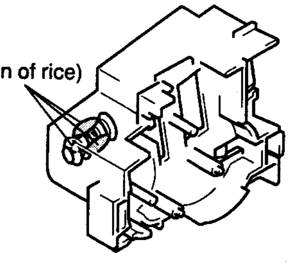
3-5. FL MOTOR ASSEMBLY, GEAR A, GEAR B AND GEAR CD ASSEMBLY

Disassembly/Assembly


Positioning bosses
FL motor assembly
Gear CD assembly
Gear A
Gear B
Hole 🅓
Hole 🅒
Hole 🅐
Hole 🅑

Remove the claws of the FL motor assembly from hole 🅐 and hole 🅑 and remove the FL motor assembly. Then, remove each gear, etc.
To attach them, after attaching the gears, etc. to the FL motor assembly and hook the positioning bosses of the FL motor block on holes 🅒 and 🅓 then fit the two claws in each hole 🅐 and 🅑.

The worm gears are attached inside the FL motor assembly. When attaching the FL motor assembly, apply grease there.

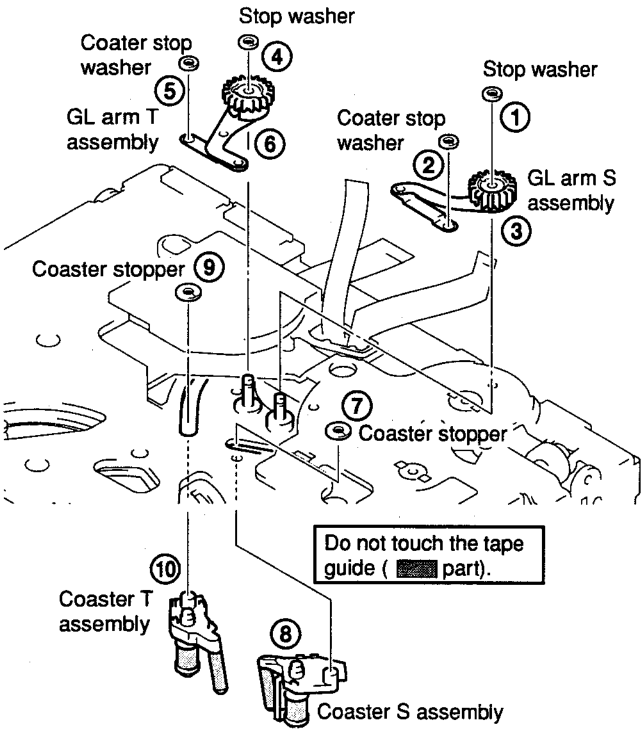


Apply grease.
(half size of one grain of rice)

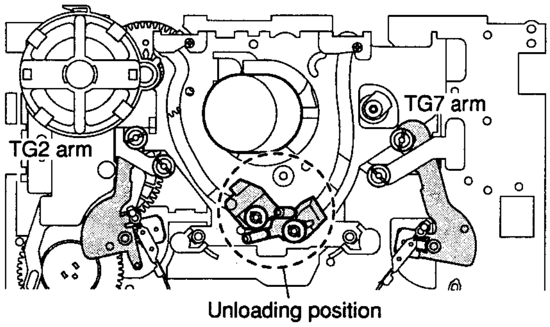
3-6. GL ARM S ASSEMBLY, GL ARM T ASSEMBLY, COASTER S ASSEMBLY AND COASTER T ASSEMBLY

Disassembly: Remove the parts in order of ①→②→③→④→⑤→⑥→⑦→⑧→⑨→⑩

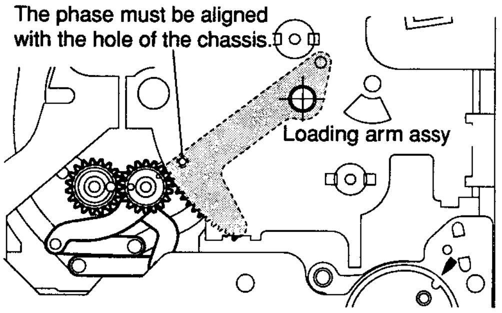
For the disassembling and assembling procedures of the GL gear, GL helical torsion spring, etc., refer to page 6-21.


Stop washer
Coater stop washer
④
⑤
GL arm T assembly
⑥
Stop washer
①
Coater stop washer
②
GL arm S assembly
③
Coaster stopper ⑨
⑦
Coaster stopper
Do not touch the tape guide (▨ part).
⑩
Coaster T assembly
⑧
Coaster S assembly

Move the TG2/7 arms to the loading position with the regulated power supply or by hand while referring to page 6-6. Each coaster assembly must be in the unloading position.

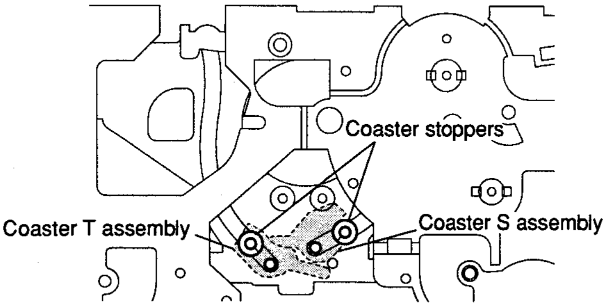

TG7 arm
TG2 arm
Unloading position

With consideration for future assembly, check from the rear of the chassis that the phase of the loading arm assy is aligned.

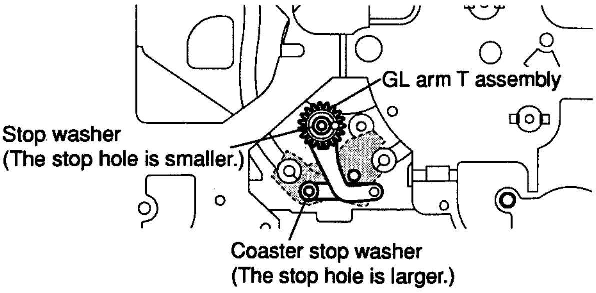

The phase must be aligned with the hole of the chassis.
Loading arm assy

Assembly

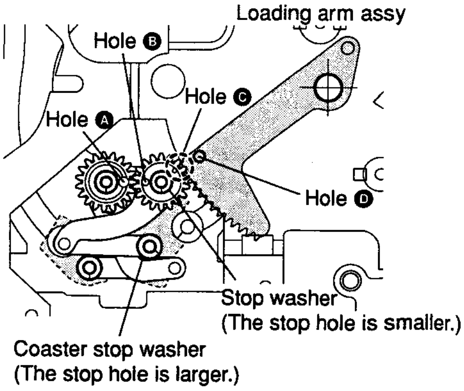
① Attach the coaster S/T assembly to the chassis with a new coaster stopper while being careful not to touch the tape guide. Do the work while holding the drum side of each coaster.


Coaster stoppers
Coaster T assembly
Coaster S assembly

② Attach the GL arm T assembly. Fix the stop washers in the correct position, using new stop washers.


GL arm T assembly
Stop washer
(The stop hole is smaller.)
Coaster stop washer
(The stop hole is larger.)

③ Attach the GL arm S assembly while checking the phase of each part. Fix the stop washers at the correct position, using new stop washers.

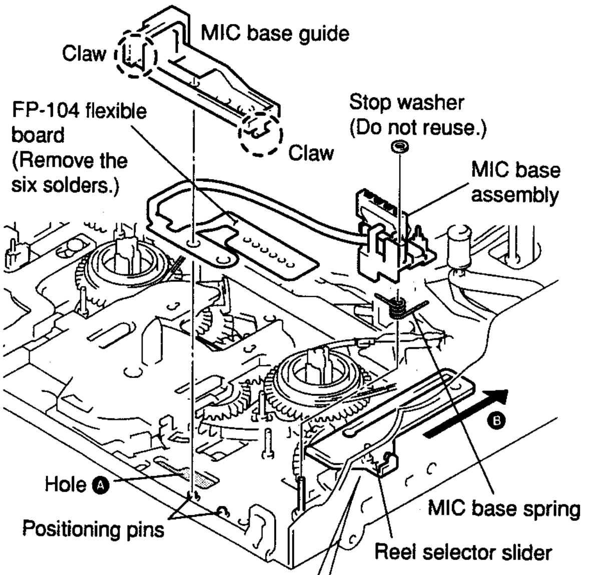

Loading arm assy
Hole 🅑
Hole 🅒
Hole 🅐
Hole 🅓
Stop washer
(The stop hole is smaller.)
Coaster stop washer
(The stop hole is larger.)

Check each phase adjustment while referring to the above figure.
Hole 🅐 of the GL gear T and hole 🅑 of the GL gear S must face each other. Hole 🅓 of the loading arm assy must be aligned with the hole of the chassis, and the endmost gear tooth of the loading arm assy must face toward hole 🅒 of the GL gear S.

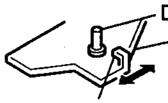
3-7. MIC BASE GUIDE, MIC BASE ASSEMBLY AND MIC BASE SPRING

Disassembly/Assembly

For the disassembling and assembling procedures of the components of the MIC base assembly, refer to page 6-21.


MIC base guide
Claw
FP-104 flexible board
(Remove the six solders.)
Stop washer
(Do not reuse.)
Claw
MIC base assembly
Ⓑ
Hole Ⓐ
Positioning pins
MIC base spring
Reel selector slider

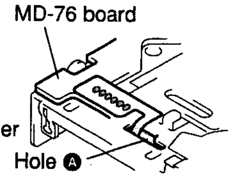
When selecting a cassette position, be careful not to touch the slider drive shaft because it can be easily bent or broken.


Do not touch the slider drive shaft.
Reel select slider

Select the desired cassette position by pressing the claw position.

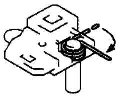
Remove the six solders on the FP-104 flexible board from the rear of the chassis. Pass the flexible board through hole Ⓐ and pull it out of the front side of the chassis while being careful not to damage it. To attach the flexible board, perform the steps of disassembly in reverse order.

Six solders
Temperature of tip of soldering iron : 350 ± 20 °C
Hold time : one second or shorter


MD-76 board
Hole Ⓐ

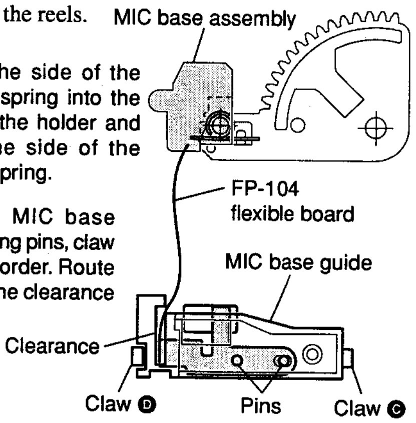
Move the reel selector slider in the direction of arrow Ⓑ and attach the MIC base assembly at the position of "S cassette". For the assembly of the MIC base spring, refer to the figure.

Note: Do not hold the shaft when selecting the reels.



Insert the side of the shorter spring into the hole of the holder and hook the side of the longer spring.

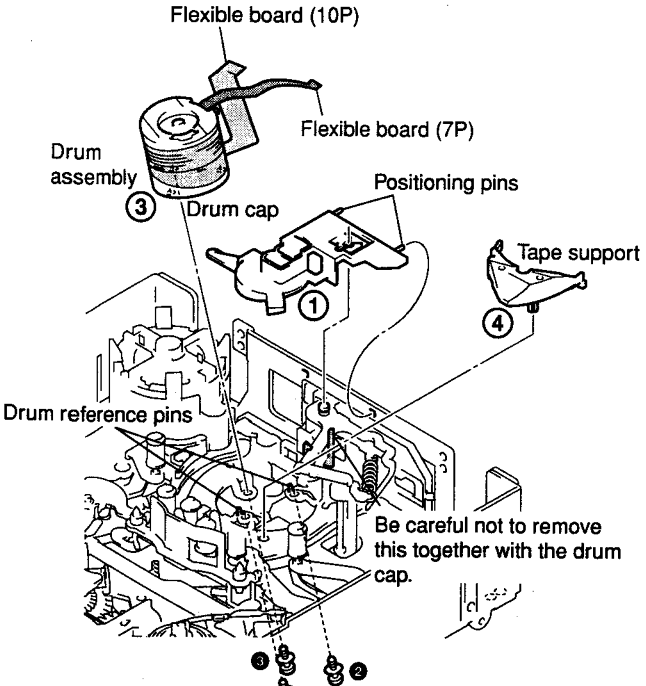
When attaching the MIC base guide, lock the positioning pins, claw Ⓒ, and claw Ⓓ in this order. Route the flexible board into the clearance of the MIC base guide.


MIC base assembly
FP-104 flexible board
MIC base guide
Clearance
Claw Ⓓ
Pins
Claw Ⓒ

3-8. DRUM CAP, DRUM ASSEMBLY AND TAPE SUPPORT

Disassembly: Remove them in order of ①→②→③

For the disassembly and assembly procedures of the components of the drum assembly, refer to page 6-22.


Flexible board (10P)
Flexible board (7P)
Drum assembly
Positioning pins
③
Drum cap
Tape support
①
④
Drum reference pins
Be careful not to remove this together with the drum cap.
❸
❷
❶
②

Drum fixing screw assembly
(Fasten the screws in order ❶, ❷, ❸.)

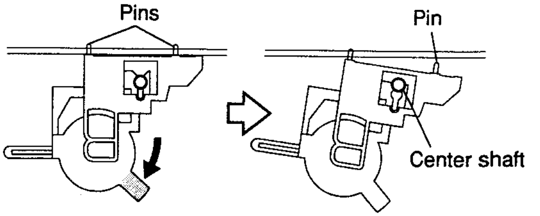
Tightening torque of drum assembly
0.02941 ± 0.0049 N • m
(0.3 ± 0.05 kg • cm)

Assembly: Attach the parts while referring to the disassembly procedure and the figure below.

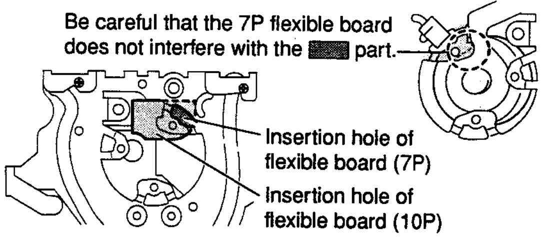
(After assembling, adjust the tape path while referring to page 6-23 and thereafter.)

Assembly and disassembly of the drum assembly

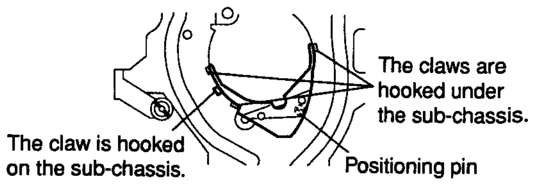
When pulling the ▨ part in the direction of the arrow, the claw is removed from the center shaft, then the right pin and the drum cap are removed as shown in the figure on the right. To attach the drum assembly, perform the disassembly steps in reverse order.


Pins
Pin
Center shaft

Assembly and disassembly of the drum assembly


Be careful that the 7P flexible board does not interfere with the ▨ part.
Insertion hole of flexible board (7P)
Insertion hole of flexible board (10P)

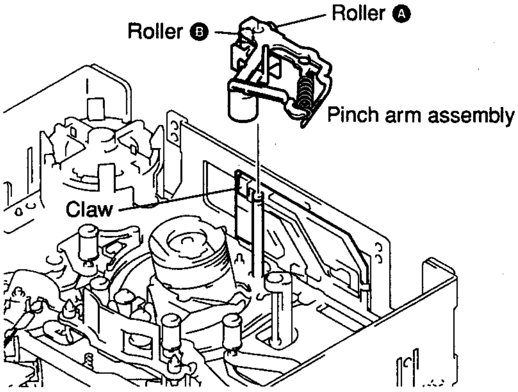
Assembly and disassembly of the tape support


The claws are hooked under the sub-chassis.
The claw is hooked on the sub-chassis.
Positioning pin

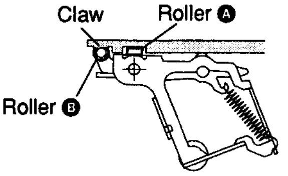
3-9. PINCH ARM ASSEMBLY

Disassembly/Assembly

For the disassembling and assembling procedures of the tape retainer and compression coil spring (tape retainer), refer to page 6-22.


Roller Ⓑ
Roller Ⓐ
Pinch arm assembly
Claw

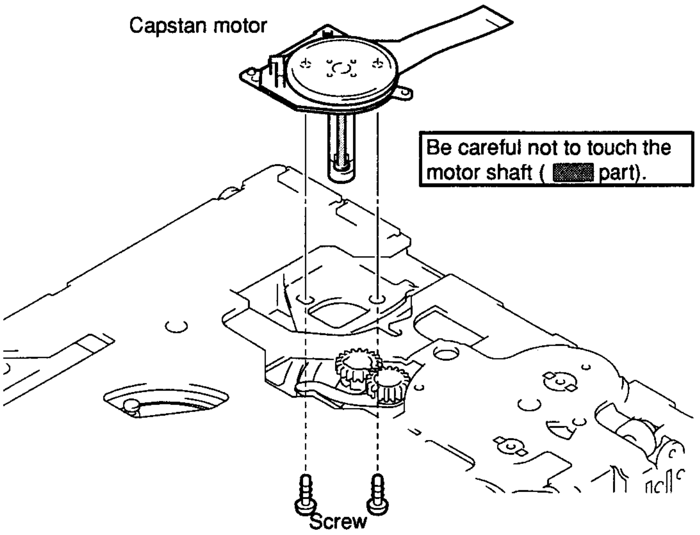
Push roller Ⓐ into the groove as shown in the figure. Insert roller Ⓑ into the claw. To remove the pinch arm assembly, pull out the pinch arm upward while pushing the claw.


Claw
Roller Ⓐ
Roller Ⓑ

3-10. CAPSTAN MOTOR

Disassembly/Assembly

(After assembling, adjust the tape path from page 6-23.)


Capstan motor
Screw

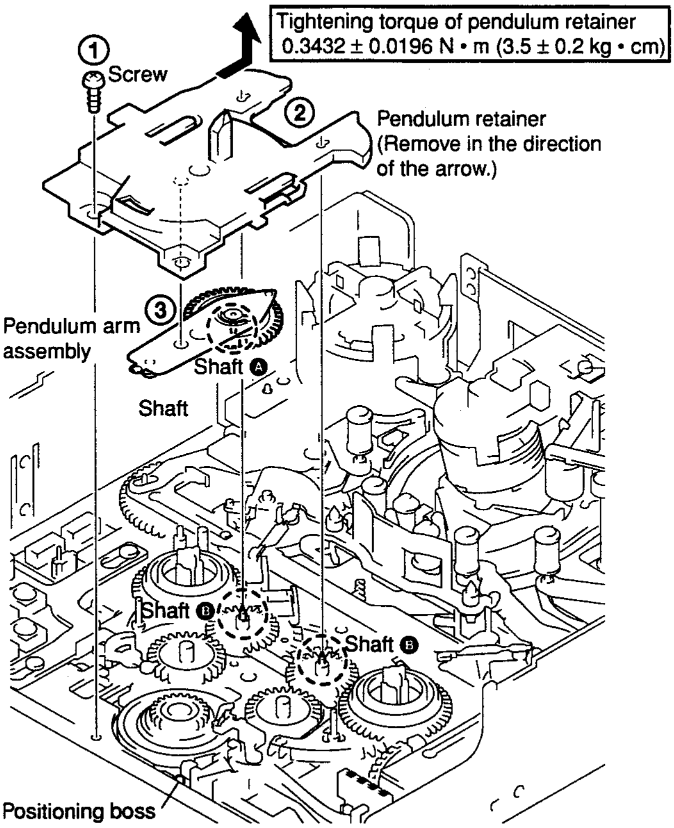
Be careful not to touch the motor shaft (▨ part).

Tightening torque of capstan motor
0.1961 ± 0.0196 N • m (2.0 ± 0.2 kg • cm)

3-11. PENDULUM RETAINER AND PENDULUM ARM ASSEMBLY

Disassembly: Remove them in order of ①➜②➜③

(To attach them, perform the disassembly steps in reverse order.)

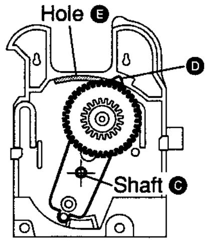

①
Screw
②
Pendulum retainer
(Remove in the direction
of the arrow.)
③
Pendulum arm
assembly
Shaft Ⓐ
Shaft
Shaft Ⓑ
Shaft Ⓑ
Positioning boss

Tightening torque of pendulum retainer
0.3432 ± 0.0196 N • m (3.5 ± 0.2 kg • cm)

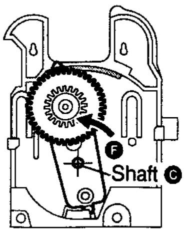
Notes during assembly

When assembling or disassembling the pendulum arm assembly, be careful of the following.

[Rear side of pendulum retainer]

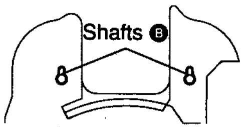


Insert tip Ⓓ of the pendulum arm into hole Ⓔ of the pendulum retainer and insert the pendulum into shaft Ⓒ.

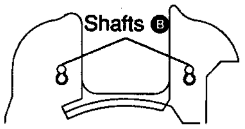


Slide the pendulum arm in the direction of arrow Ⓕ and attach it to the chassis.

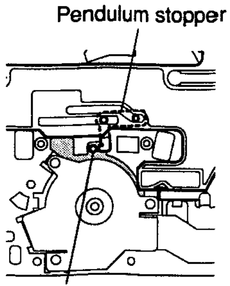
Attach the pendulum retainer to shaft Ⓑ. Be careful of the positions of the pendulum stopper at the rear of the chassis and shaft Ⓐ of the pendulum arm.



Can be removed.



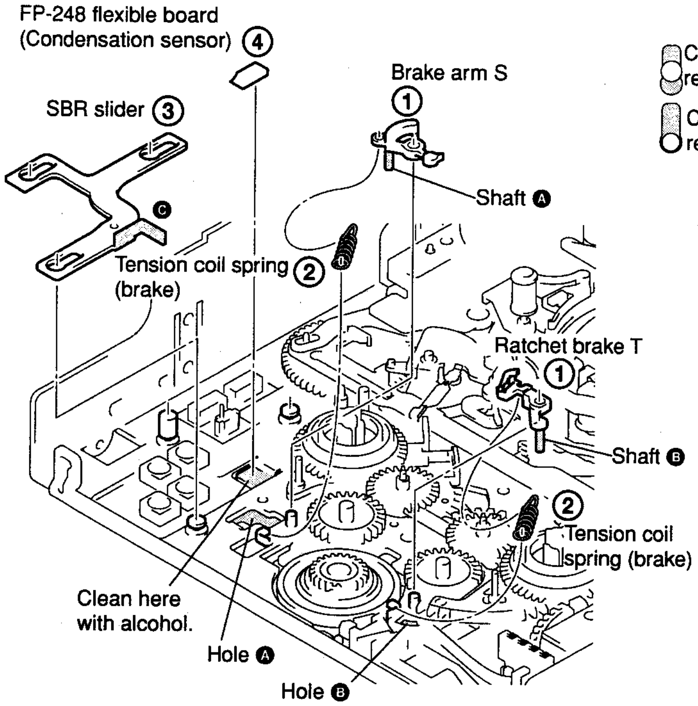
Cannot be removed.


Pendulum stopper

Shaft Ⓐ of the pendulum must be in this position.

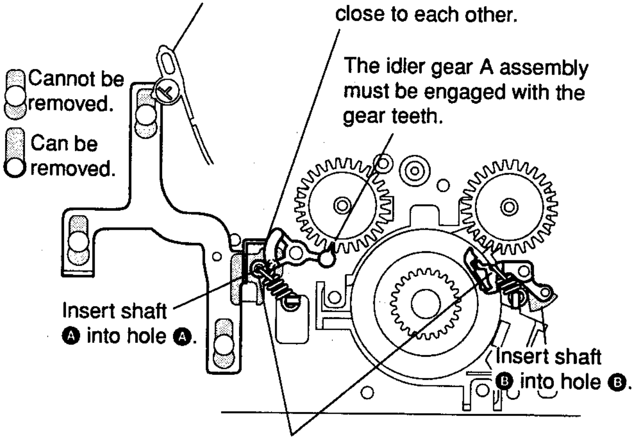
3-12. BRAKE ARM S, RATCHET BRAKE T, TENSION COIL SPRING (BRAKE), SBR SLIDER AND FP-248 FLEXIBLE BOARD (CONDENSATION SENSOR)

Disassembly: Remove them in order of ①→②→③→④
(To attach them, perform the disassembly steps in reverse order.)


FP-248 flexible board
(Condensation sensor) ④
SBR slider ③
Brake arm S
①
Shaft 🅐
🅒
Tension coil spring ②
(brake)
Ratchet brake T
①
Shaft 🅑
②
Tension coil
spring (brake)
Clean here
with alcohol.
Hole 🅐
Hole 🅑

Remove the SBR slider while being careful not to touch the adjuster.

Portion 🅒 of the SBR slider and brake arm S must run close to each other.

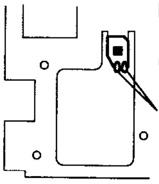

Cannot be
removed.
Can be
removed.

The idler gear A assembly must be engaged with the gear teeth.

Insert shaft 🅐 into hole 🅐.

Insert shaft 🅑 into hole 🅑.

Hook the hook of the spring on the brake side from underneath.



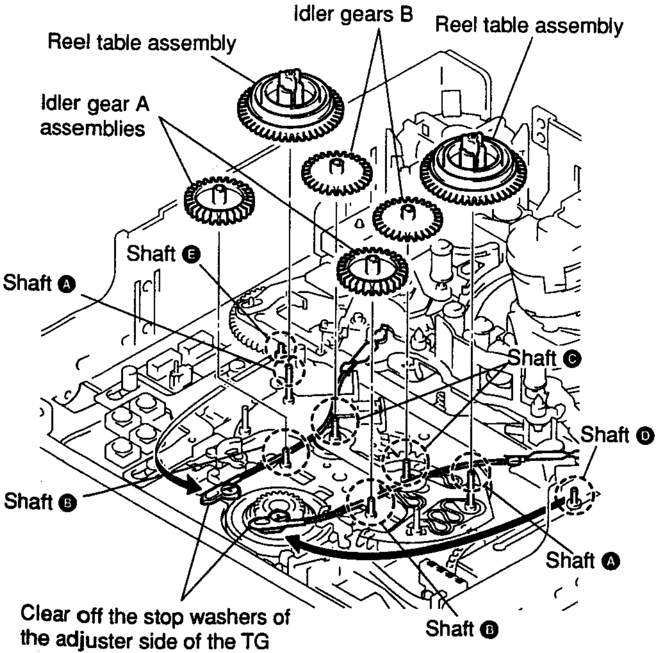
When attaching the FP-248 flexible board, scrape the contact surface with a swab to stick the flexible board to the chassis.
Do not touch the sensor block (black area).

Two solders
Temperature of tip of soldering iron:
350 ± 20 °C
Hold time:
one second or shorter

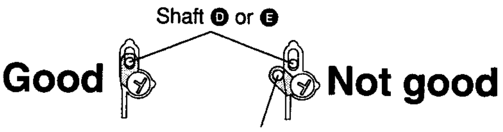
3-13. REEL TABLE ASSEMBLY, IDLER GEAR A ASSEMBLY AND IDLER GEAR B

Disassembly/Assembly
(Do not touch the TG band block.)
When the reel table assembly is replaced or attached, perform each adjustment from Adjustment Start -1 of the flowchart on page 6-23.

Checks before work
The TG band winds around the slit of the reel table assembly. Before removing the reel table assembly, clear off the TG band while referring to the left figure. When attaching the TG band, be sure to use new stop washers.

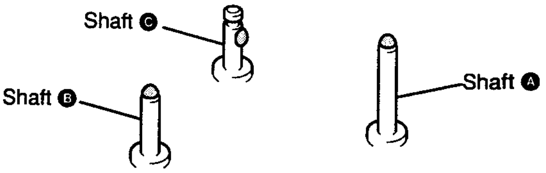

Idler gears B
Reel table assembly
Reel table assembly
Idler gear A
assemblies
Shaft 🅒
Shaft 🅐
Shaft 🅒
Shaft 🅓
Shaft 🅔
Shaft 🅐
Shaft 🅑

Clear off the stop washers of the adjuster side of the TG band in advance as shown in the figure.

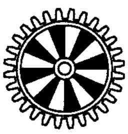

Shaft 🅓 or 🅔
Good
Not good

When attaching the TG band, the part also must be inserted into shaft 🅓 or 🅔.

When attaching each gear, apply grease to each fixing shaft. Apply grease of half the size of one rice grain to the top side of shaft 🅒. When attaching the idler gear A assembly, be careful not to apply grease to the reflection panel.


Shaft 🅒
Shaft 🅑
Shaft 🅐

Apply grease to ▩ part.
(half size of one grain of rice)

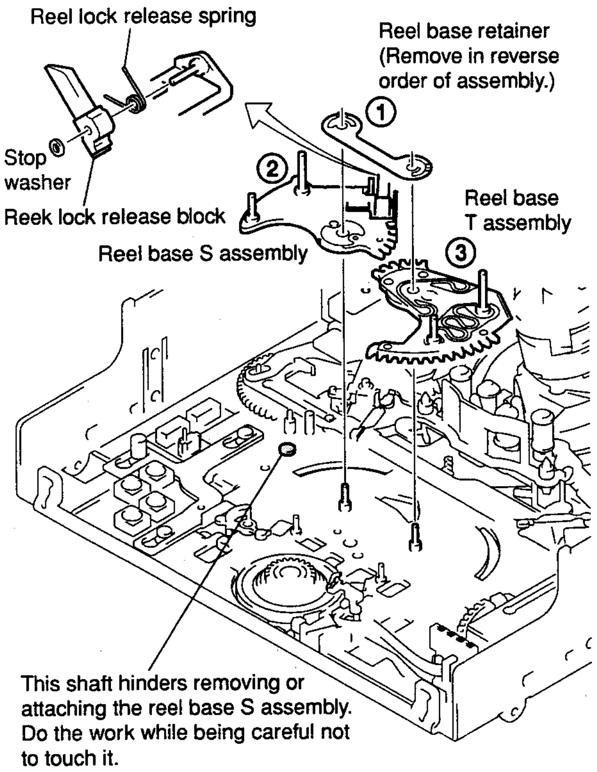


When attaching the idler gear A assembly, be careful not to apply grease to the reflection panel.

3-14. REEL BASE RETAINER, REEL BASE T ASSEMBLY AND REEL BASE S ASSEMBLY (REEL LOCK RELEASE BLOCK AND REEL LOCK RELEASE SPRING)

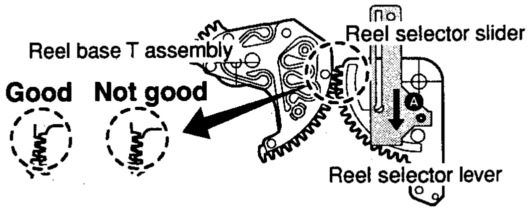
Disassembly: Remove them in order of ①→②→③

(Refer to Assembly, too.)

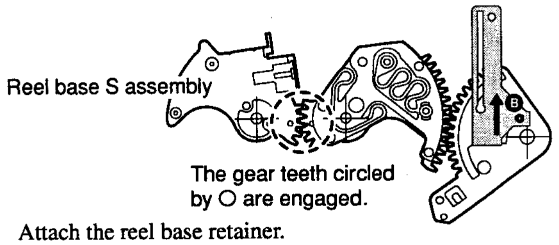

Reel lock release spring
Reel base retainer (Remove in reverse order of assembly.)
①
Stop washer
②
Reek lock release block
Reel base S assembly
Reel base T assembly
③
This shaft hinders removing or attaching the reel base S assembly. Do the work while being careful not to touch it.

Assembly: Attach them in order of ①→②→③

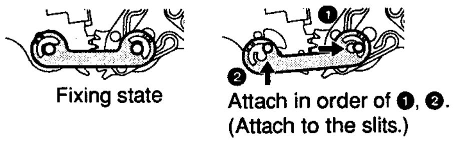
① Move the reel selector slider in the direction of arrow Ⓐ to check that the reel selector lever is "L cassette". At this position, attach the reel base T assembly. The gear teeth must be engaged as shown in the figure.


Reel base T assembly
Reel selector slider
Good
Not good
Ⓐ
Reel selector lever

② Move the reel selector slider in the direction of arrow Ⓑ and switch the reel selector lever to "S cassette". At this position, attach the reel base S assembly. The gear teeth (circled by ○) must be engaged as shown in the figure.


Reel base S assembly
Ⓑ
The gear teeth circled by ○ are engaged.

③ Attach the reel base retainer.

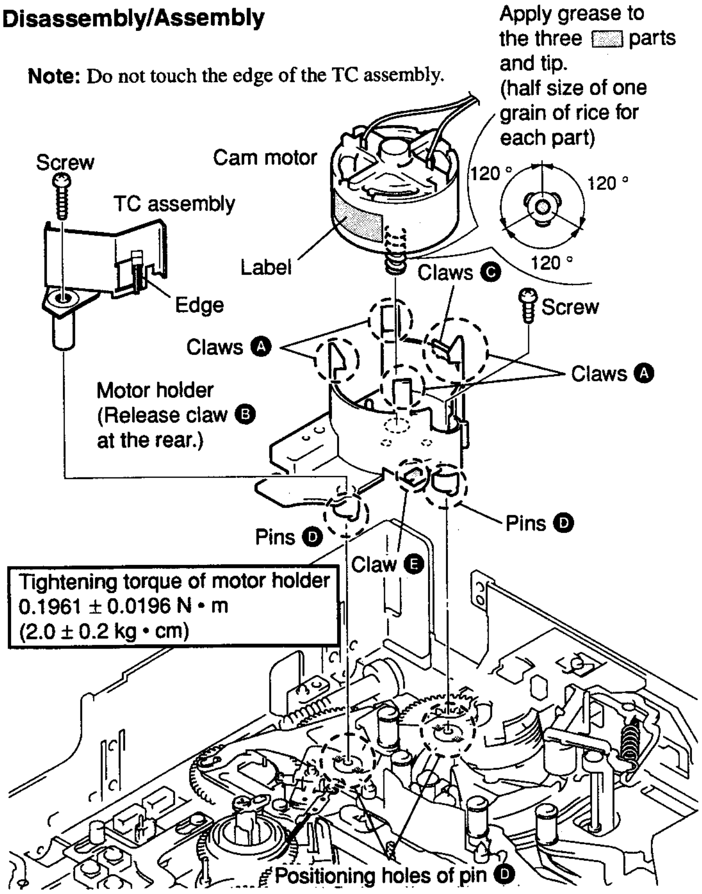

❶
❷
Fixing state
Attach in order of ❶, ❷. (Attach to the slits.)

Note: Do not hold the shaft when selecting the reels.

3-15. CAM MOTOR, MOTOR HOLDER

Disassembly/Assembly

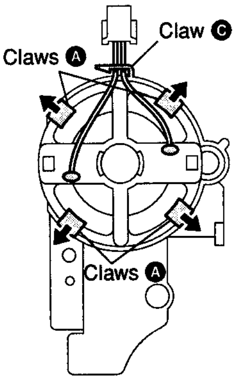
Note: Do not touch the edge of the TC assembly.


Apply grease to the three ▨ parts and tip. (half size of one grain of rice for each part)
Screw
Cam motor
TC assembly
120°
120°
120°
Label
Claws Ⓒ
Edge
Screw
Claws Ⓐ
Claws Ⓐ
Motor holder (Release claw Ⓑ at the rear.)
Pins Ⓓ
Pins Ⓓ
Claw Ⓑ
Positioning holes of pin Ⓓ

Tightening torque of motor holder
0.1961 ± 0.0196 N • m
(2.0 ± 0.2 kg • cm)

Checks before disassembly and assembly

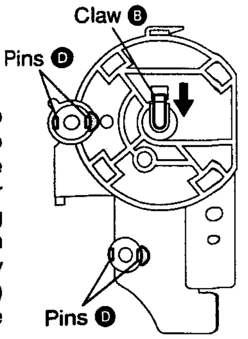
The cam motor is fixed on the motor holder by the four claws. Releasing the four claws enables the cam motor to be removed without removing the motor holder from the chassis. When attaching the cam motor, be careful of the assembling direction (the label must face toward the front). If the phase of the gear, etc. moves when removing the motor holder, refer to page 6-11.


Claw Ⓒ
Claws Ⓐ
Claws Ⓐ

[Front side of motor holder]
While spreading claws Ⓐ in the direction of the arrow, pull out the cam motor upward. To attach it, push the cam motor into the motor holder and route the two wires of the cam motor into claw Ⓒ.

When attaching the TG2 control arm, claw Ⓔ must be inserted into the hole of the TG2 control arm.

[Rear side of motor holder]
The motor holder is fixed by the two screws and claw Ⓑ at the rear. To remove it, push claw Ⓑ in the direction of the arrow from the rear of the chassis. Note that positioning pins Ⓓ are easy to break when attaching the motor holder. Apply grease (half size of one grain of rice) to the two ▨ parts shown in the right figure.


Claw Ⓑ
Pins Ⓓ
Pins Ⓓ

3-16. TG2/7 ARM BLOCK, TG2/7 BAND BLOCK AND TENSION COIL SPRING (TG2)/(TG7)

Disassembly: Remove them in order of ①→②→③→④

For the disassembling and assembling procedures of the assembly components of the TG2/TG7 arm, refer to page 6-22.

Be careful not to touch the tape guide (▨ part) and TG band block

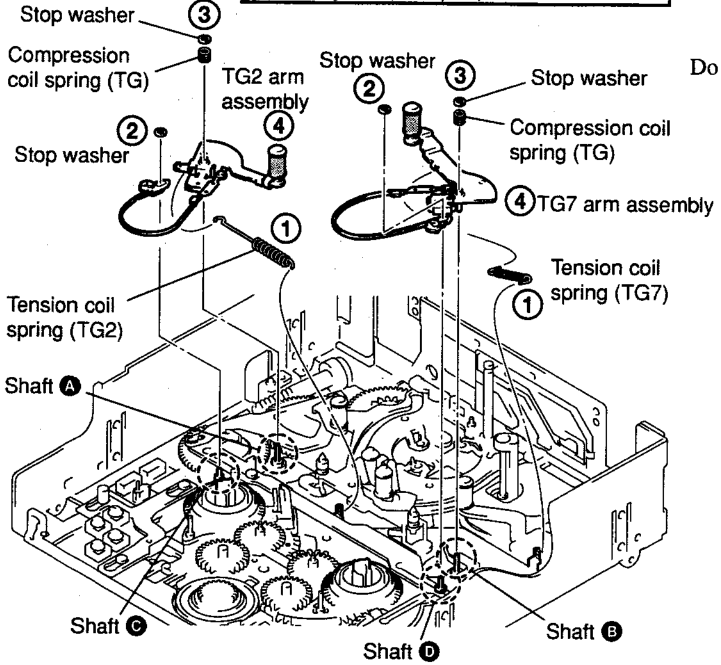

Stop washer ③
Compression coil spring (TG)
TG2 arm assembly ④
Stop washer ②
Stop washer ②
Stop washer ③
Stop washer
Compression coil spring (TG)
④TG7 arm assembly
①
Tension coil spring (TG7) ①
Tension coil spring (TG2)
Shaft 🅐
Shaft 🅒
Shaft 🅓
Shaft 🅑

Fig. 1

Notes during work

Be careful when handling the TG arm and the peripheral parts.

- Twisting and bending of the band block and tension coil spring
- Dirt and scratches of the tape guide
- Loss of the compression coil spring (TG)

Do not reuse removed stop washers.

Disassembly of the band TG2/TG7 assembly

When pulling portion 🅔 of the TG2 or TG7 band in the direction of the arrow, a click sound is heard as the band is removed. To attach the bands, pull out the opposite side to portion 🅔 to lock.

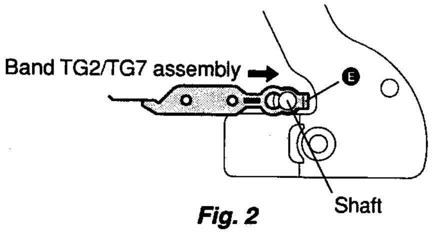

Band TG2/TG7 assembly →
🅔
Shaft

Fig. 2

Assembly: Attach them while referring to figure above or below and the descriptions.

When these parts are replaced or attached, perform each adjustment from Adjustment Start -3 of the flowchart on page 6-23.

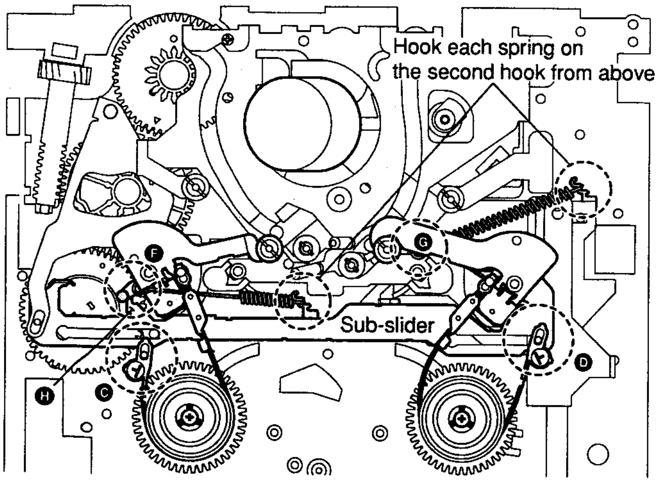

Hook each spring on the second hook from above
🅕
🅖
Sub-slider
🅗
🅒
🅓

Fig. 3

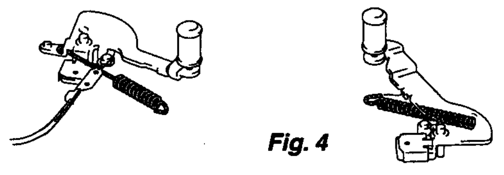
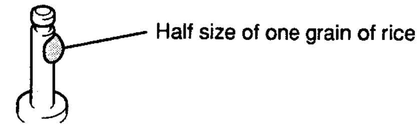


Fig. 4

[TG2 side]
Hook the spring from the inside and put it under the TG band.

[TG7 side]
Hook the spring from the outside and put it under the arm.

① Apply grease to the top side of the fixing shaft (🅐 or 🅑) of the TG arm. (Fig. 1)

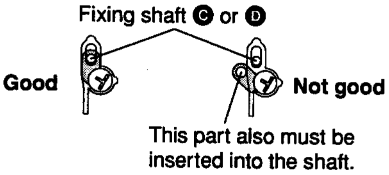

Half size of one grain of rice

② Attach the TG band assembly to the TG arm assembly. (Fig. 2) Be sure that the felt sides of the TG band face toward the reel tables so that they surround the respective reel tables.

③ Attach the tension coil spring to the TG arm assembly. (Fig. 3, 4)
- Hook the spring of the tension coil spring (TG2) from the inside and put it under the TG band. (Fig. 3-🅕, 4)
- Hook the spring of the tension coil spring (TG7) from the outside and put it under the TG7 band. (Fig. 3-🅖, 4)

④ Attach the TG arm block to the shaft (🅐 or 🅑) and attach the tension coil spring to the second hook. When attaching the TG2 arm, the ▨ part must be at the left of portion 🅗 of the slider. (Fig. 3)

⑤ Attach the adjuster of the TG band to shafts 🅒 and 🅓.


Fixing shaft 🅒 or 🅓
Good
Not good
This part also must be inserted into the shaft.

⑥ Fix the TG band and TG arm with new stop washers. When attaching the TG arm, do not forget to attach the compression coil spring (TG). (Fig. 1)

3-17. SUB-SLIDER ARM, SUB-SLIDER, ENCODER GEAR, MAIN CAM GEAR, COUPLING GEAR, SUB-CAM GEAR, PINCH SLIDER AND LOADING ARM ASSY

Disassembly: Remove them in order of ①→②→③→④→⑤→⑥→⑦→⑧

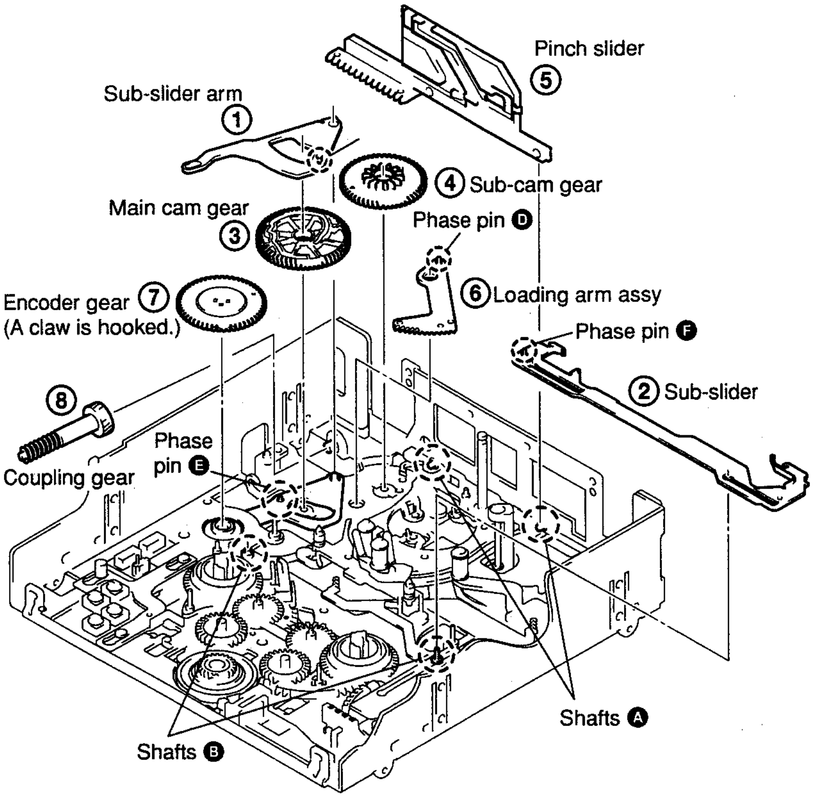

Pinch slider
⑤
Sub-slider arm
①
④ Sub-cam gear
Main cam gear
③
Phase pin Ⓓ
Encoder gear ⑦
(A claw is hooked.)
⑥ Loading arm assy
Phase pin Ⓕ
② Sub-slider
⑧
Phase
pin Ⓔ
Coupling gear
Shafts Ⓐ
Shafts Ⓑ

Fig. 1

Disassembly of the pinch slider

Move the pinch slider to the leftmost end, and slide it upward and remove it when two shafts Ⓐ are superimposed on the holes of the pinch slider.

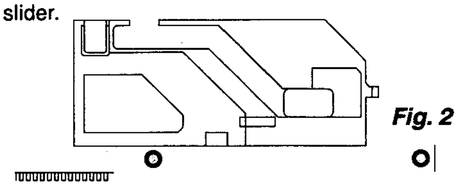


Fig. 2

Disassembly of the sub-slider

Move the sub-slider to the rightmost and remove it from two shafts Ⓑ.

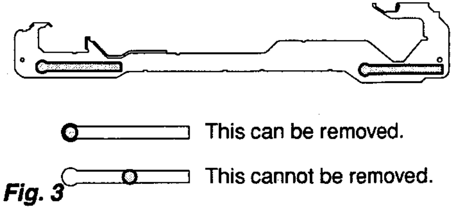

This can be removed.
This cannot be removed.

Fig. 3

Disassembly of the encoder gear

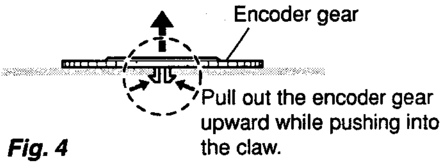

Encoder gear
Pull out the encoder gear upward while pushing into the claw.

Fig. 4

Assembly: Attach them while referring to the figure above or below and the descriptions.

Check before work

When attaching the parts described in this section, various phase adjustments are required. Before work, refer to page 6-19 and check the reference phases.

[Rear side of chassis]

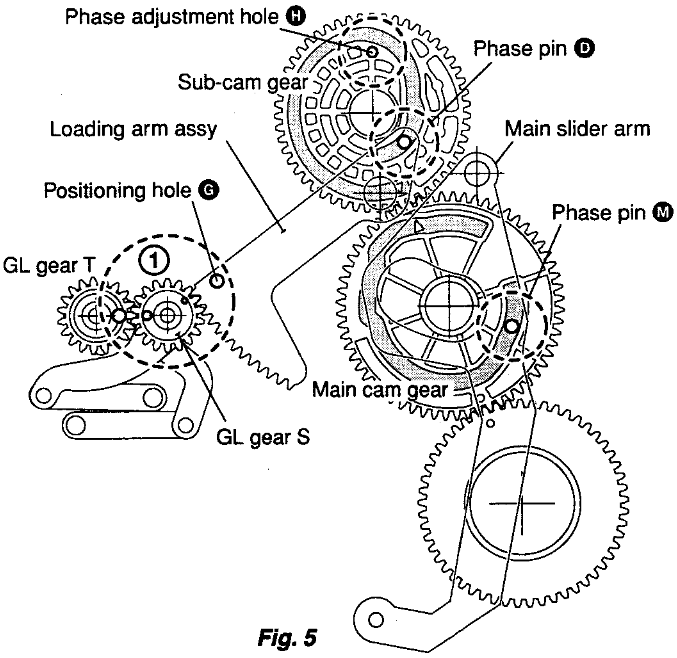

Phase adjustment hole Ⓗ
Phase pin Ⓓ
Sub-cam gear
Loading arm assy
Main slider arm
Positioning hole Ⓖ
Phase pin Ⓜ
GL gear T
①
Main cam gear
GL gear S

Fig. 5

① Attach the loading arm assy. (Refer to the figure above.)
The phases of the GL gear S and GL gear T must match and the positioning hole Ⓖ of the loading arm assy must be superimposed on the hole of the chassis. (Fig. 5)

② Attach the pinch slider. (Fig. 1, 2)

③ Apply grease to the groove at the rear of the sub-cam gear. (Fig. 6)
After applying, adjust the phase of the sub-cam gear to that of the pinch slider. (Fig. 7)
Phase pin Ⓓ of the loading arm assy must be inserted into the groove at the rear of the sub-cam gear. (Fig. 5, 7)

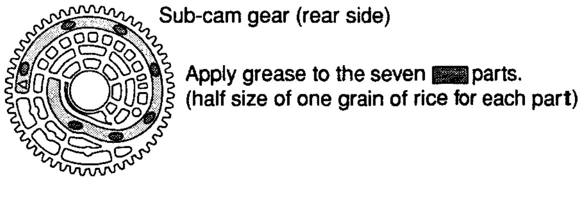

Sub-cam gear (rear side)
Apply grease to the seven ▨ parts.
(half size of one grain of rice for each part)

Fig. 6

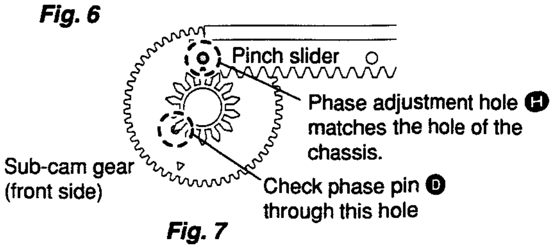

Pinch slider
Phase adjustment hole Ⓗ matches the hole of the chassis.
Sub-cam gear
(front side)
Check phase pin Ⓓ through this hole

Fig. 7

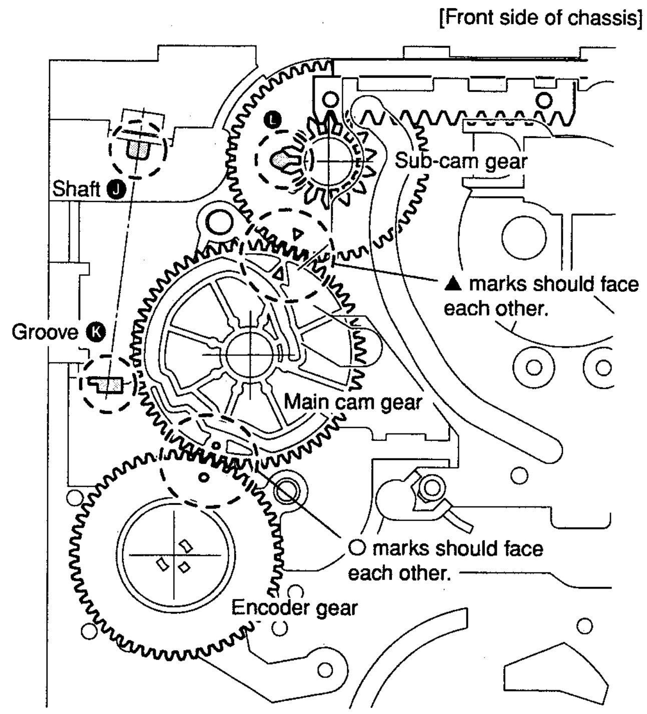

[Front side of chassis]
Ⓛ
Sub-cam gear
Shaft Ⓙ
▲ marks should face each other.
Groove Ⓚ
Main cam gear
O marks should face each other.
Encoder gear

Fig. 8

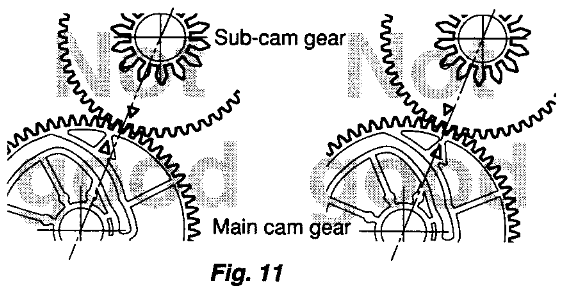

Sub-cam gear
Not good
Main cam gear

Fig. 11

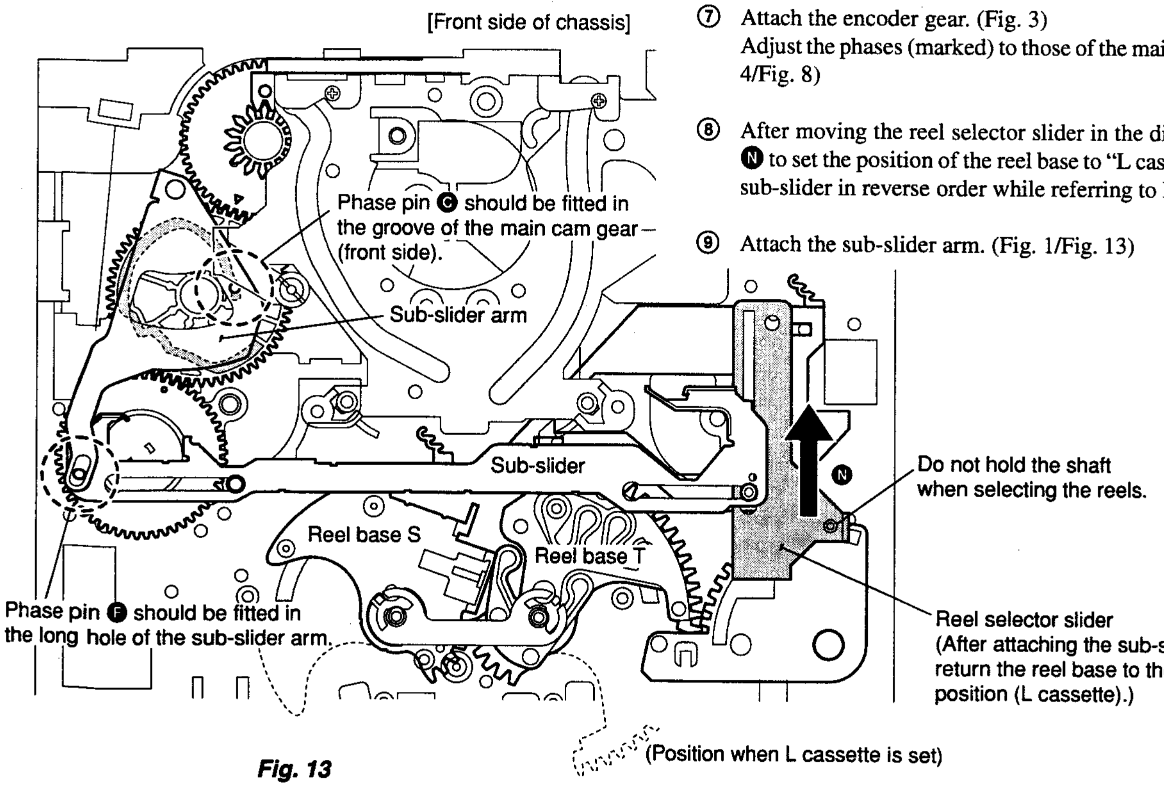

[Front side of chassis]
Phase pin Ⓜ should be fitted in the groove of the main cam gear (front side).
Sub-slider arm
Sub-slider
Reel base S
Reel base T
Ⓝ
Phase pin Ⓕ should be fitted in the long hole of the sub-slider arm.
Do not hold the shaft when selecting the reels.
Reel selector slider (After attaching the sub-slider arm, return the reel base to the original position (L cassette).)
(Position when L cassette is set)

Fig. 13

④ Apply grease to the fixing block (shaft Ⓙ and U-shaped groove Ⓚ) of the coupling gear and portion Ⓛ of the sub-cam gear (half size of one grain of rice for each part). (Fig. 8)

⑤ Attach the coupling gear. After attaching, apply grease while rotating the coupling gear by 120° each time. (Fig. 9, 10)

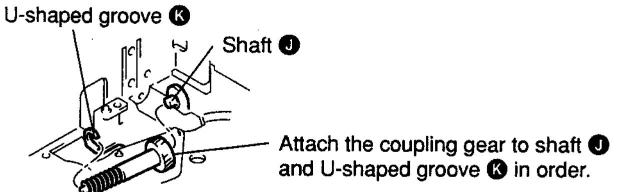

U-shaped groove Ⓚ
Shaft Ⓙ
Attach the coupling gear to shaft Ⓙ and U-shaped groove Ⓚ in order.

Fig. 9

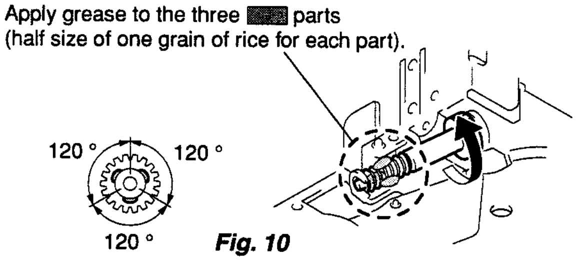

Apply grease to the three ▩ parts (half size of one grain of rice for each part).
120 °
120 °
120 °

Fig. 10

⑥ Attach the main cam gear while being careful of the directions of the front and rear sides. Also, take care of the phase adjustment to the sub-cam gear. (Fig. 8, 11, 12)
Phase pin Ⓜ of the main slider arm should be fitted in the groove of the main cam gear (rear side). (Fig. 5)

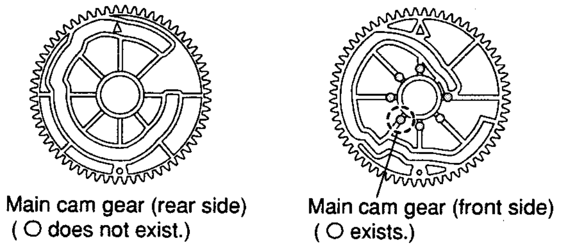

Main cam gear (rear side)
(O does not exist.)
Main cam gear (front side)
(O exists.)

Fig. 12

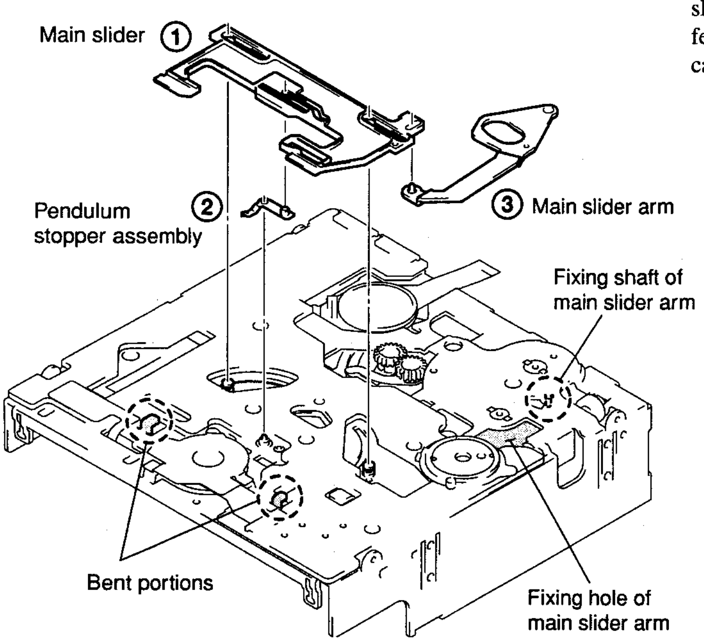
⑦ Attach the encoder gear. (Fig. 3)
Adjust the phases (marked) to those of the main cam gear. (Fig. 4/Fig. 8)

⑧ After moving the reel selector slider in the direction of arrow Ⓝ to set the position of the reel base to "L cassette", attach the sub-slider in reverse order while referring to Fig. 3. (Fig. 13)

⑨ Attach the sub-slider arm. (Fig. 1/Fig. 13)

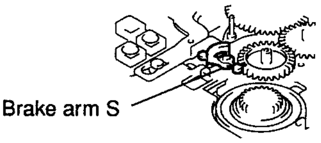
3-18. MAIN SLIDER, MAIN SLIDER ARM AND PENDULUM STOPPER ASSEMBLY

Disassembly: Remove them in order of ①→②→③


Main slider ①
Pendulum stopper assembly ②
③ Main slider arm
Fixing shaft of main slider arm
Bent portions
Fixing hole of main slider arm

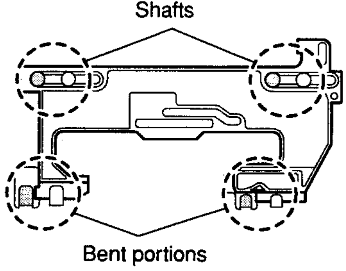
Disassembly of each part

The main slider controls several parts. Before removing the main slider, remove "Brake arm S" at the front of the chassis while referring to "Information" on page 6-5. Otherwise, the main slider cannot be removed.



Main slider

The main slider is fixed by the two shafts and the two bent portions at the rear of the chassis. The main slider can be removed when it is moved to the rightmost end (▨ positions).

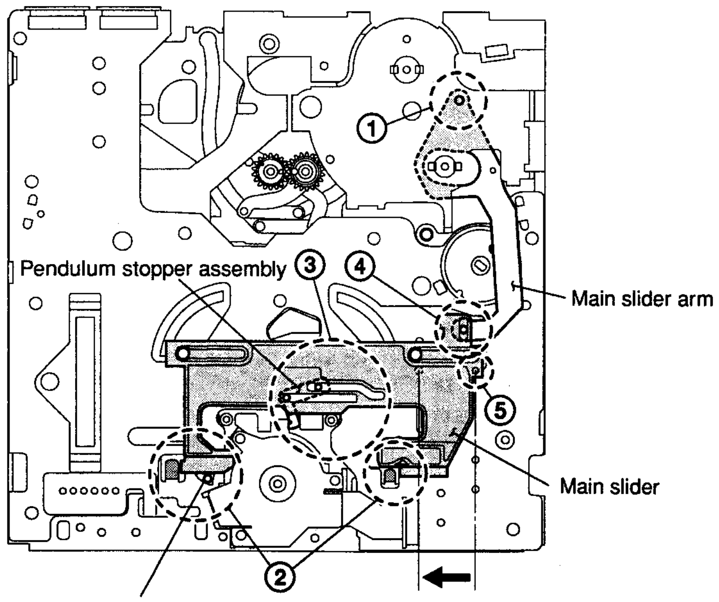

Shafts
Bent portions

Assembly: Attach them while referring to the figure above or below and the descriptions.

Assembly of each part

Attach each part while referring to the figure above or below. When attaching the parts, adjust the positions carefully while referring to the instructions in the figure below. Because these positioning will be used as a reference when assembling in future, make sure to adjust the positions and phases correctly.

[Rear side of chassis]


①
Pendulum stopper assembly ③
④
Main slider arm
⑤
Main slider
②

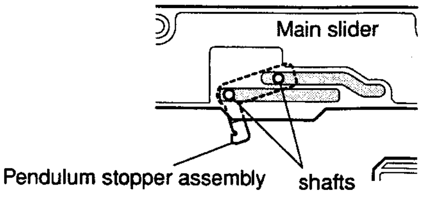
The shaft of the ratchet brake T should be at the position where it can be viewed fromthe outside as shown in the figure.

Move the main slider so that the positioning holes are superimposed.

① Insert the main slider arm into the fixing hole and attach it to the fixing shaft at the front of the chassis while referring to the figure above. (To facilitate assembly, stick adhesive tape so that the main slider arm does not drop.)

② Perform assembly so that the main slider can pass under the bent portion of the chassis. If "Ratchet brake T" remains, move down the "Ratchet brake T" as shown in the left figure and attach the main slider.

③ Carefully attach the pendulum stopper assembly so that the two shafts fit in the two long holes of the main slider.

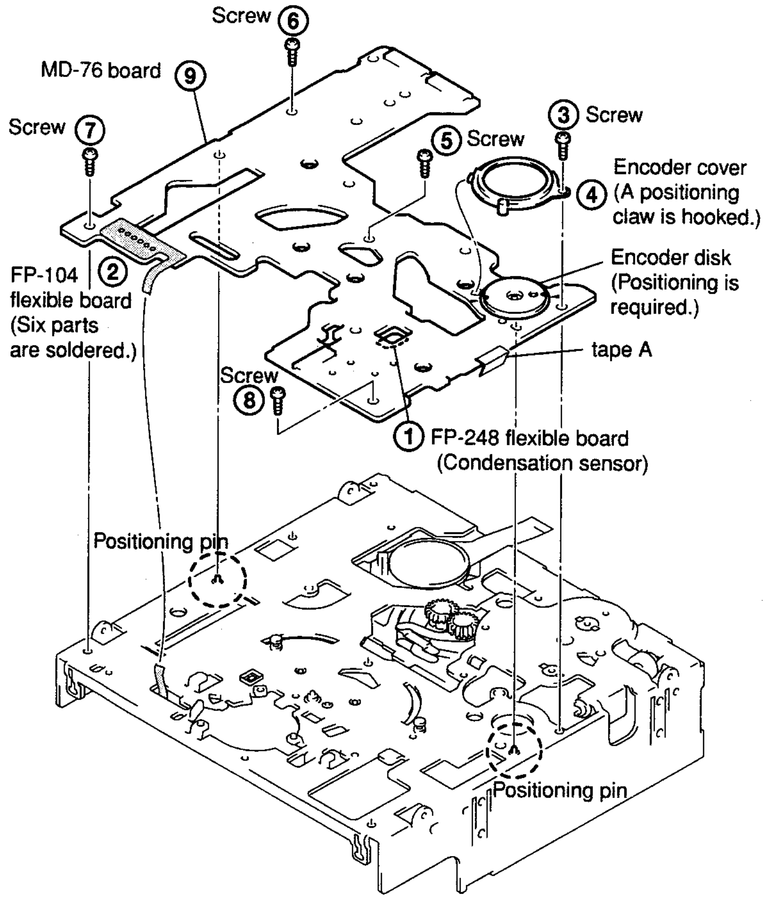

Main slider
Pendulum stopper assembly
shafts

④ Attach the shaft of the main slider arm to the long hole of the main slider.

⑤ Move the main slider to the leftmost end so that the small positioning hole of the main slider is superimposed on the small positioning hole of the chassis, and fix the main slider. The position where the main slider is fixed will be used as a reference during assembling and phase adjustment in future.
(To avoid affecting the main unit, fix the reel motor and main slider with adhesive tape, etc.)

3-19. MD-76 BOARD AND ENCODER RETAINER

Disassembly: Remove them in order of ①→②→③→④→⑤→⑥→⑦→⑧→⑨


Screw ⑥
MD-76 board ⑨
Screw ⑦
③ Screw
⑤ Screw
Encoder cover
④ (A positioning claw is hooked.)
Encoder disk (Positioning is required.)
FP-104 ② flexible board (Six parts are soldered.)
tape A
Screw ⑧
① FP-248 flexible board (Condensation sensor)
Positioning pin
Positioning pin

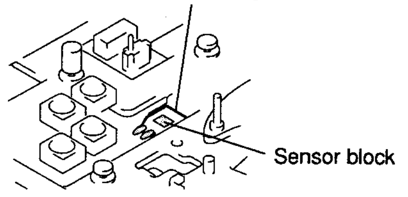
Disassembly of MD-76 board

Peel off the FP-248 flexible board at the front of the chassis (refer to page 6-14). Remove the six solders on the FP-104 flexible board from the rear of the chassis. Remove the screws in order of ③ to ⑧ shown in the figure. When removing the MD-76 board from the chassis, be careful not to let the sensors touch the chassis.

Note: When the tape A is removed, use the new tape A for replacement. (See the illustration below.)

FP-248 flexible board

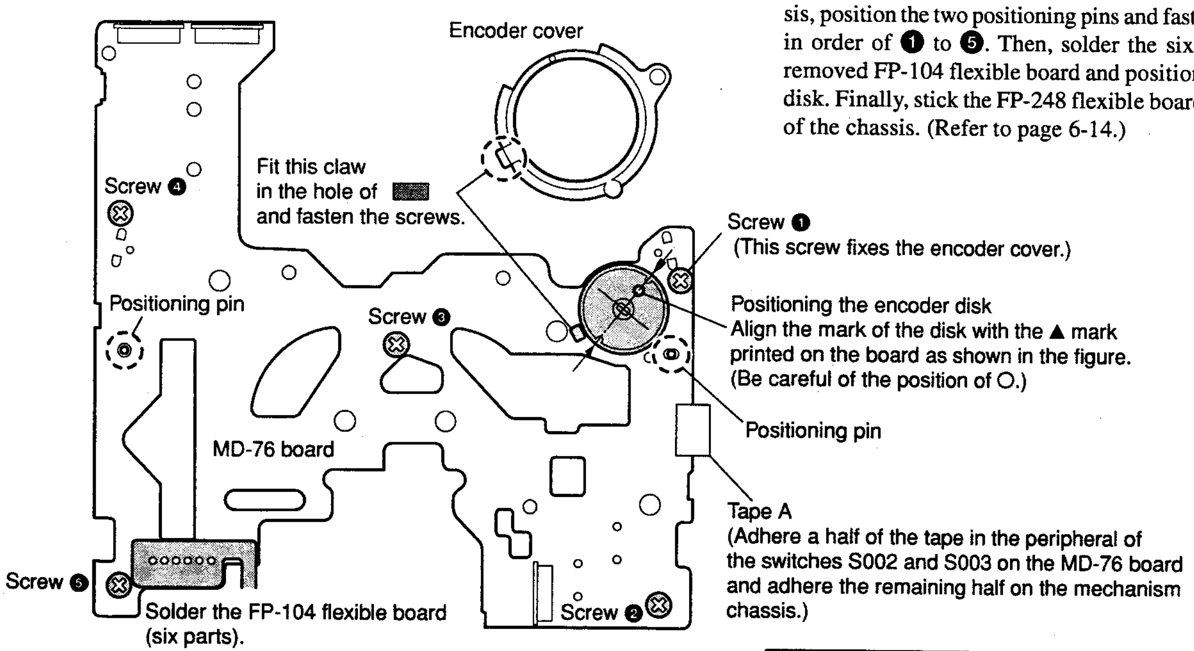
Peel off the flexible board while being careful not to get the sensor block dirty or damage the sensor block.


Sensor block

Assembly: Attach them in order of ⑨→④→③→⑤→⑥→⑦→⑧→①→②
(Refer to the figure above or below.)

Assembly of MD-76 board

While being careful not to let the sensors touch the chassis, position the two positioning pins and fasten the screws in order of ❶ to ❺. Then, solder the six parts on the removed FP-104 flexible board and position the encoder disk. Finally, stick the FP-248 flexible board on the front of the chassis. (Refer to page 6-14.)

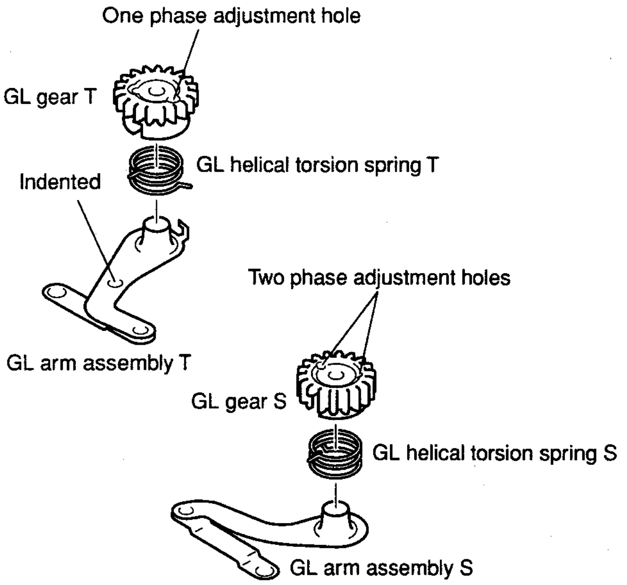

Encoder cover
Fit this claw in the hole of ▨ and fasten the screws.
Screw ❹
Screw ❶ (This screw fixes the encoder cover.)
Positioning pin
Screw ❸
Positioning the encoder disk
Align the mark of the disk with the ▲ mark printed on the board as shown in the figure.
(Be careful of the position of O.)
Positioning pin
MD-76 board
Tape A
(Adhere a half of the tape in the peripheral of the switches S002 and S003 on the MD-76 board and adhere the remaining half on the mechanism chassis.)
Screw ❺
Screw ❷

Solder the FP-104 flexible board (six parts).
Temperature of tip of soldering iron: 350 ± 20 °C
Hold time: one second or shorter

Tightening torque of MD-76 board
0.3432 ± 0.0196 N·m (3.5 ± 0.2 kg • cm)

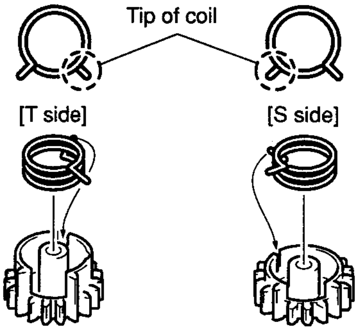
3-20. COMPONENTS OF GL ARM S/T ASSEMBLY (GL ARM ASSEMBLY, GL HELICAL TORSION SPRING, GL GEAR)

Disassembly and distinguishing the S side from the T side


One phase adjustment hole
GL gear T
Indented
GL helical torsion spring T
Two phase adjustment holes
GL arm assembly T
GL gear S
GL helical torsion spring S
GL arm assembly S

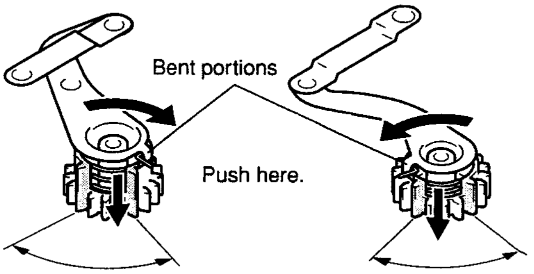
Assembly

① Attach each GL helical torsion spring to the GL gear. To distinguish the S side from the T side when the opening of the spring tip is facing toward the front, note that the coil tip of the S side is located on the left and that of the T side is located on the right.


Tip of coil
[T side]
[S side]

Fit the tip of the spring into the small cut-out of the GL gear.

② Hook the tip of the spring on the bent portion of the GL arm assembly and push the bent portion of the GL arm into the large cut-out of the GL gear while rotating the GL gear in the direction of the arrow.

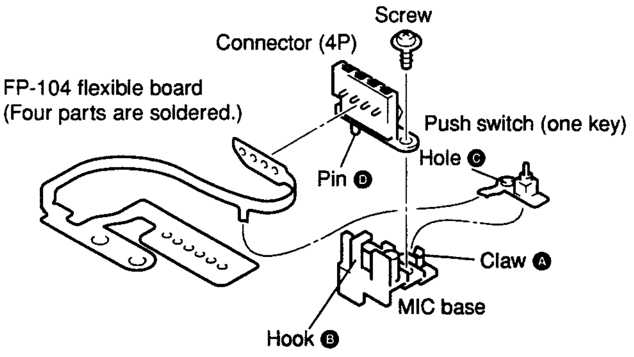

Bent portions
Push here.

When the bent portion of the GL arm comes inside this range, push the bent portion into the gear.

3-21. COMPONENTS OF MIC BASE ASSEMBLY (FP-104 FLEXIBLE BOARD, MIC BASE)

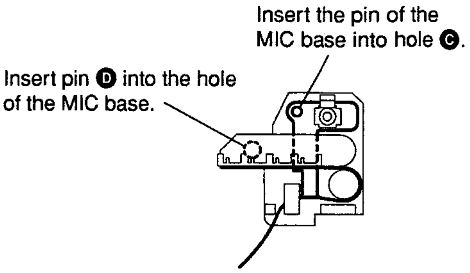
Disassembly

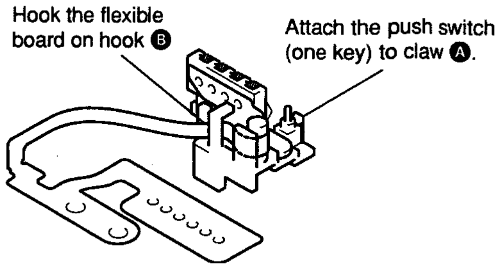
Remove the push switch from claw Ⓐ of the MIC base. Remove the screw and connector (4P). Then, remove the flexible board while being careful not to touch hook Ⓑ.


Screw
Connector (4P)
FP-104 flexible board
(Four parts are soldered.)
Push switch (one key)
Hole Ⓒ
Pin Ⓓ
Claw Ⓐ
MIC base
Hook Ⓑ

Tightening torque of connector (4P)
0.0392 ± 0.0098N • m (0.4 ± 0.1 kg • cm)

Assembly


Insert the pin of the MIC base into hole Ⓒ.
Insert pin Ⓓ into the hole of the MIC base.

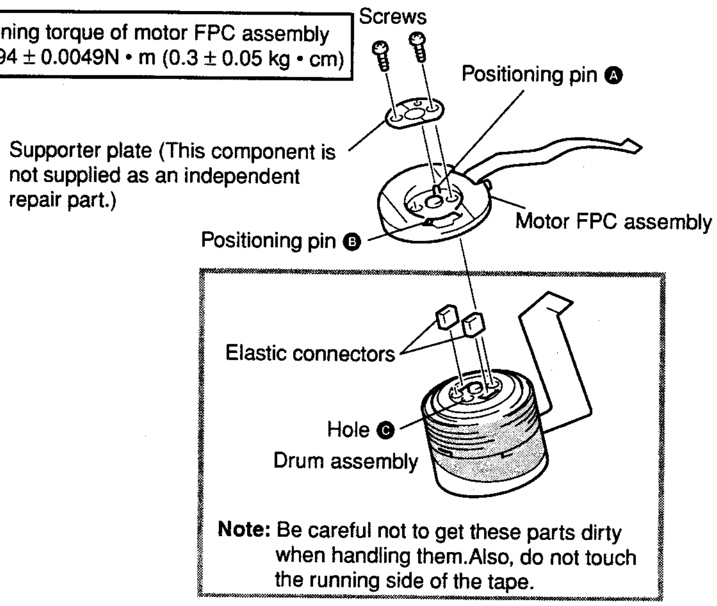

Hook the flexible board on hook Ⓑ
Attach the push switch (one key) to claw Ⓐ.

3-22. COMPONENTS OF DRUM ASSEMBLY (MOTOR FPC ASSEMBLY, ELASTIC CONNECTOR)

Disassembly/Assembly

Connect the elastic connector to the drum assembly and attach the motor FPC assembly while aligning pin Ⓑ with hole Ⓒ of the drum assembly. Fix the supporter plate with the screws while being careful of pin Ⓐ of the motor FPC assembly.

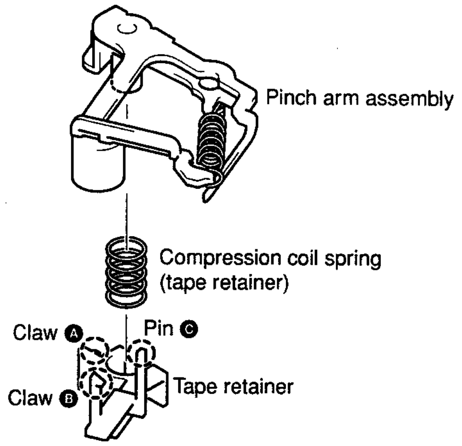
Tightening torque of motor FPC assembly
0.0294 ± 0.0049N • m (0.3 ± 0.05 kg • cm)

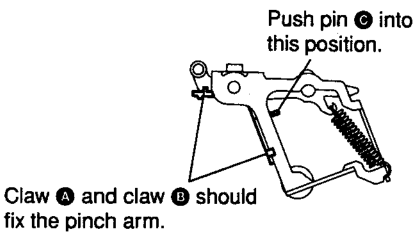

Screws
Positioning pin Ⓐ
Supporter plate (This component is not supplied as an independent repair part.)
Positioning pin Ⓑ
Motor FPC assembly
Elastic connectors
Hole Ⓒ
Drum assembly

Note: Be careful not to get these parts dirty when handling them.Also, do not touch the running side of the tape.

3-23. COMPONENTS OF PINCH ARM ASSEMBLY (TAPE RETAINER, COMPRESSION COIL SPRING)

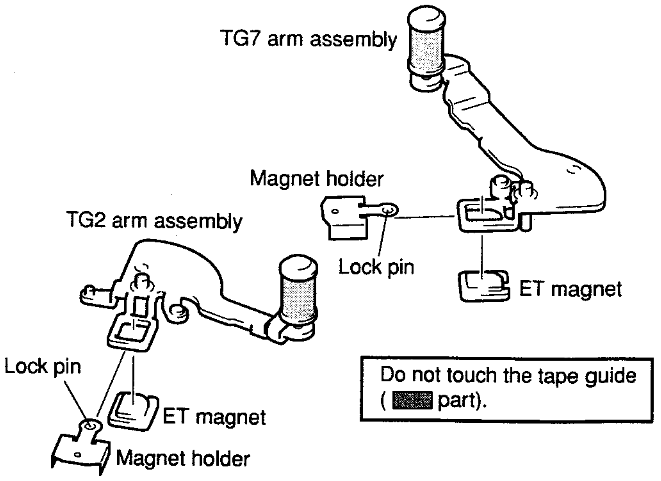
Disassembly/Assembly


Pinch arm assembly
Compression coil spring
(tape retainer)
Claw Ⓐ
Pin Ⓒ
Claw Ⓑ
Tape retainer


Push pin Ⓒ into this position.
Claw Ⓐ and claw Ⓑ should fix the pinch arm.

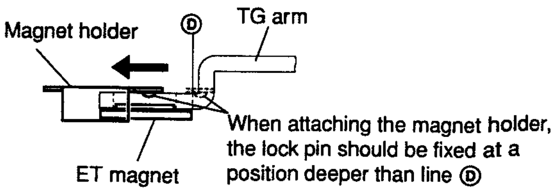
3-24. COMPONENTS OF TG2/7 ARM ASSEMBLY (ET MAGNET, MAGNET HOLDER)

Disassembly/Assembly


TG7 arm assembly
Magnet holder
TG2 arm assembly
Lock pin
ET magnet
Lock pin
ET magnet
Magnet holder

Do not touch the tape guide (▨ part).

Remove the TG2 arm assembly and the TG7 arm assembly in the direction of the arrow while pushing the lock pin of the magnet holder from the rear of each TG arm. To attach them, insert the TG2 or TG7 arm assembly in the direction opposite to the arrow while holding the ET magnet with the magnet holder, then hook the lock pin.

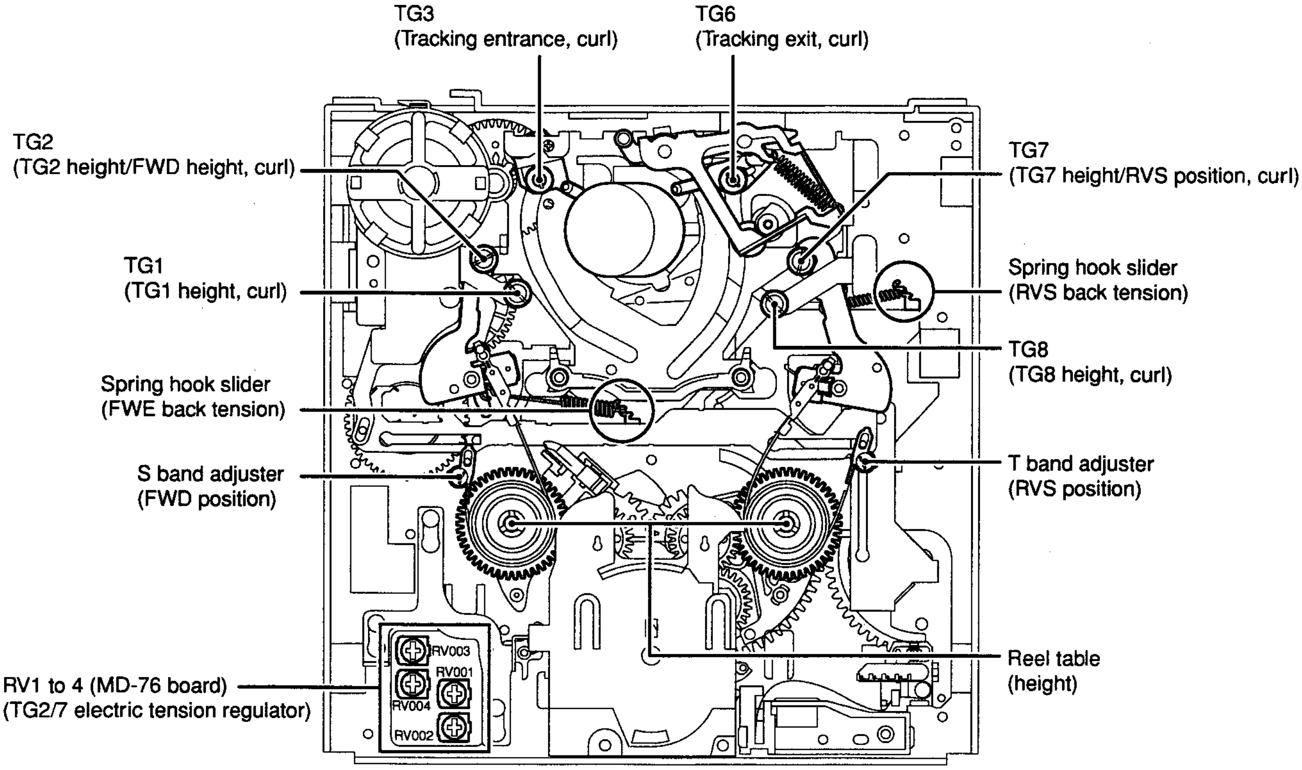

Magnet holder
Ⓓ
TG arm
ET magnet

When attaching the magnet holder, the lock pin should be fixed at a position deeper than line Ⓓ

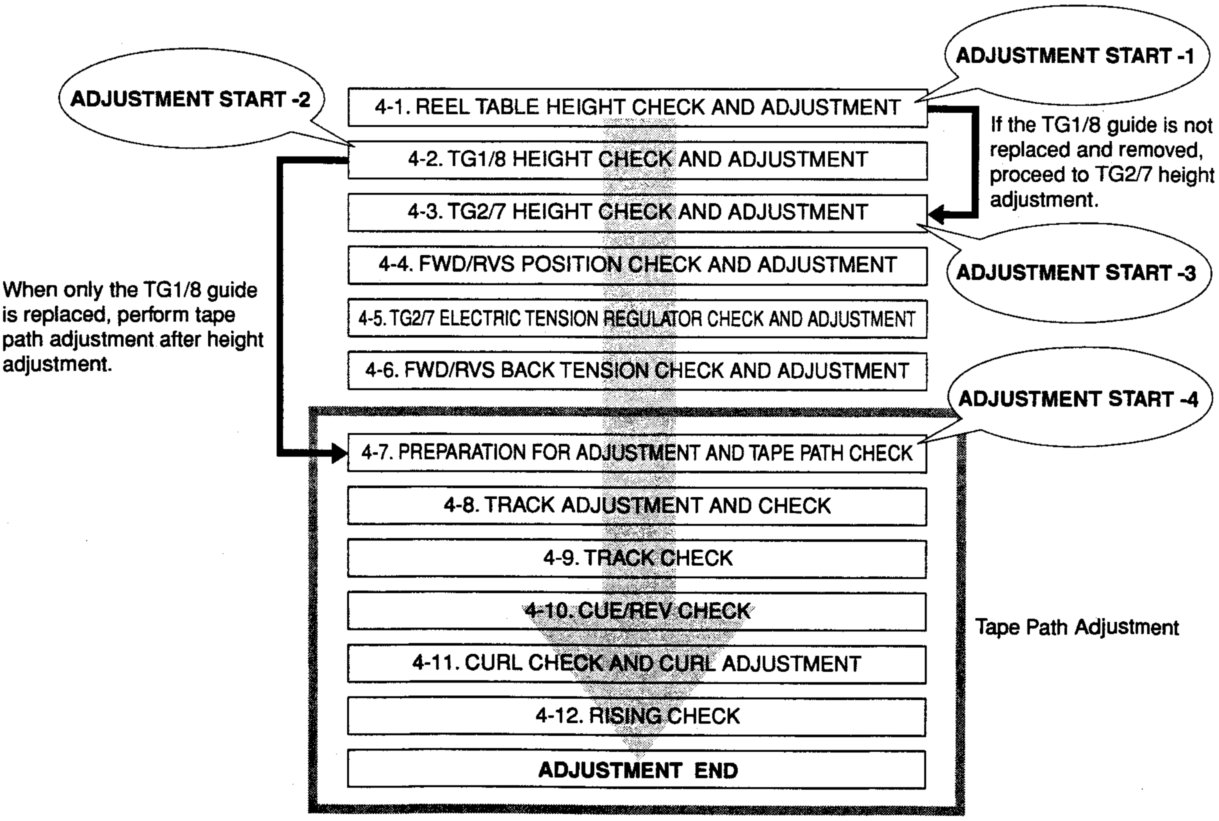
6-1-4. CHECK AND ADJUSTMENT

- When the parts of the tape path (tape guide, reel table, etc.) have been removed or parts have been replaced, adjust the following parts according to the flowchart below.

• ADJUSTMENT POSITION


TG3
(Tracking entrance, curl)
TG6
(Tracking exit, curl)
TG2
(TG2 height/FWD height, curl)
TG7
(TG7 height/RVS position, curl)
TG1
(TG1 height, curl)
Spring hook slider
(RVS back tension)
TG8
(TG8 height, curl)
Spring hook slider
(FWE back tension)
S band adjuster
(FWD position)
T band adjuster
(RVS position)
RV003
RV001
RV004
RV002
RV1 to 4 (MD-76 board)
(TG2/7 electric tension regulator)
Reel table
(height)

• ADJUSTMENT ORDER (FLOWCHART)

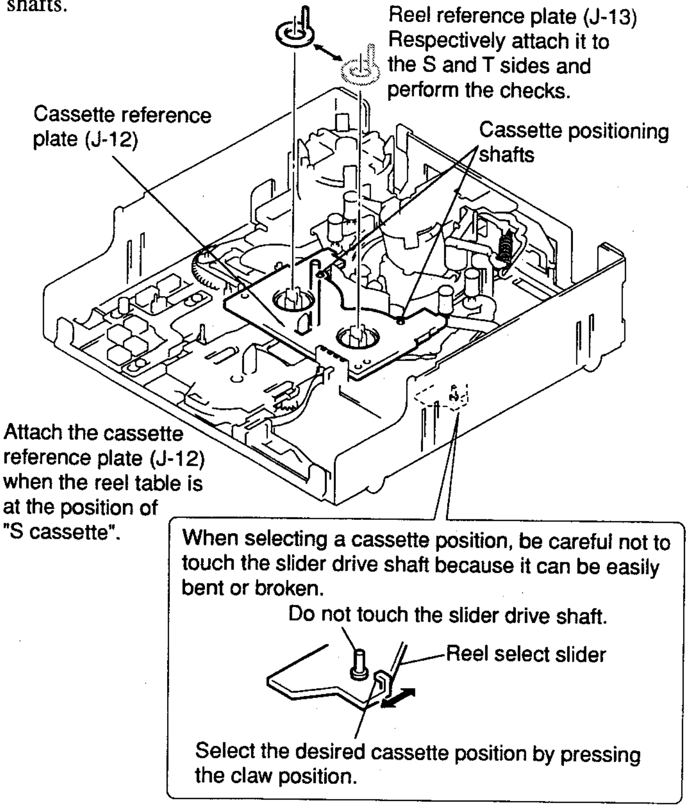

ADJUSTMENT START -1
ADJUSTMENT START -2
4-1. REEL TABLE HEIGHT CHECK AND ADJUSTMENT
If the TG1/8 guide is not replaced and removed, proceed to TG2/7 height adjustment.
4-2. TG1/8 HEIGHT CHECK AND ADJUSTMENT
4-3. TG2/7 HEIGHT CHECK AND ADJUSTMENT
ADJUSTMENT START -3
4-4. FWD/RVS POSITION CHECK AND ADJUSTMENT
When only the TG1/8 guide is replaced, perform tape path adjustment after height adjustment.
4-5. TG2/7 ELECTRIC TENSION REGULATOR CHECK AND ADJUSTMENT
4-6. FWD/RVS BACK TENSION CHECK AND ADJUSTMENT
ADJUSTMENT START -4
4-7. PREPARATION FOR ADJUSTMENT AND TAPE PATH CHECK
4-8. TRACK ADJUSTMENT AND CHECK
4-9. TRACK CHECK
4-10. CUE/REV CHECK
4-11. CURL CHECK AND CURL ADJUSTMENT
4-12. RISING CHECK
ADJUSTMENT END
Tape Path Adjustment

4-1. REEL TABLE HEIGHT CHECK AND ADJUSTMENT

1. Preparation before check

Check that the cassette compartment has already been removed. (Refer to page 6-6.)

Fit the cassette reference plate (J-12) in the cassette positioning shafts.


Reel reference plate (J-13)
Respectively attach it to the S and T sides and perform the checks.
Cassette reference plate (J-12)
Cassette positioning shafts
Do not touch the slider drive shaft.
Reel select slider

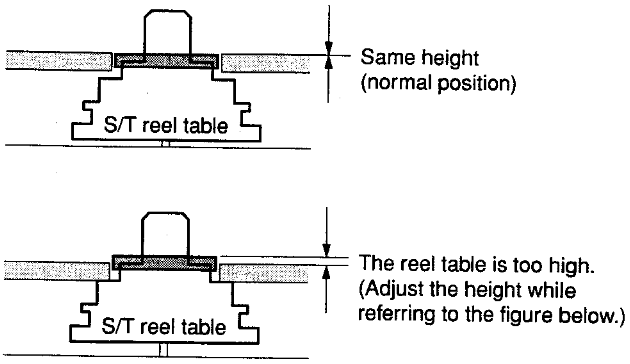
Attach the cassette reference plate (J-12) when the reel table is at the position of "S cassette".

When selecting a cassette position, be careful not to touch the slider drive shaft because it can be easily bent or broken.

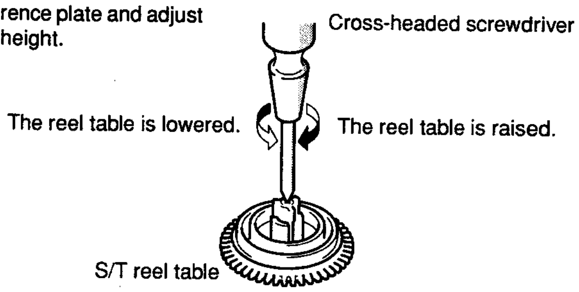
Select the desired cassette position by pressing the claw position.

2. Check and adjustment

Put the reel reference plate (J-13) on each reel table. Rotate the screw block of the reel table so that the height of the cassette reference plate is the same as that of the reel reference plate.


Same height (normal position)
S/T reel table
The reel table is too high. (Adjust the height while referring to the figure below.)
S/T reel table

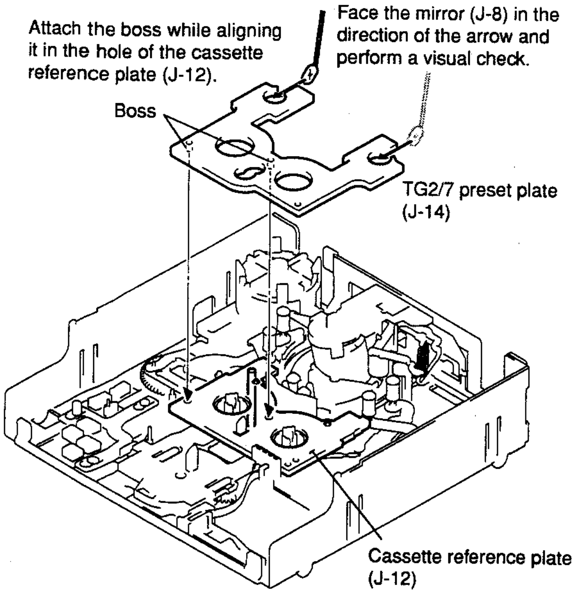
Put the reel and cassette reference plate and adjust the height.


Cross-headed screwdriver
The reel table is lowered.
The reel table is raised.
S/T reel table

4-2. TG1/8 HEIGHT CHECK AND ADJUSTMENT

1. Preparation before check

1) Check that the cassette compartment block has already been removed. (Refer to page 6-6.)
2) Set the mechanism deck to the loading end position (TG2 to 7 already moved to the loading end position and the pinch roller is in the unloading position). Alternatively, set the mechanism deck to the "LE position" using the mode selector II. (Refer to page 6-7.)
3) Place the TG2/7 preset plate (J-14).

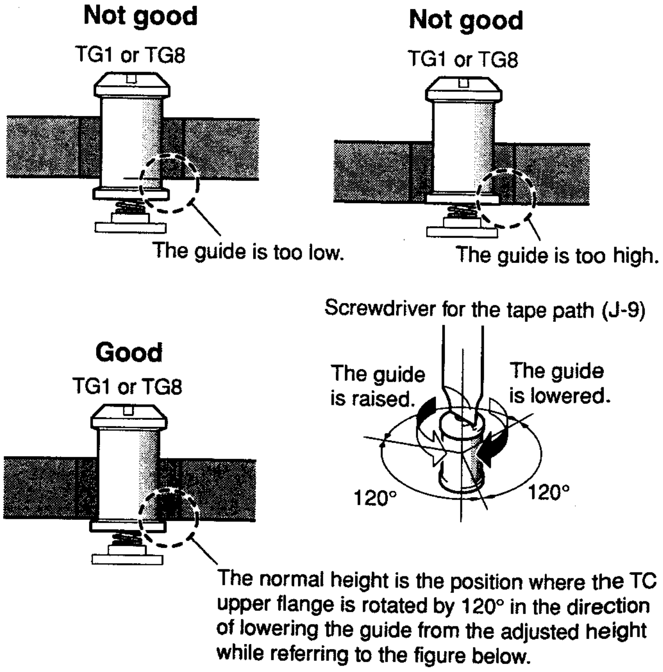

Boss
TG2/7 preset plate (J-14)
Cassette reference plate (J-12)

Attach the boss while aligning it in the hole of the cassette reference plate (J-12).

Face the mirror (J-8) in the direction of the arrow and perform a visual check.

2. Check and adjustment

Rotate the TG upper flange until the heights of the TG2/7 preset plate (J-14) and TG1 or TG8 roller block are the same. Alternatively, rotate the TG upper flange by 120° in the direction of lowering the guide from the reference height where the preset plate and roller have the same height.

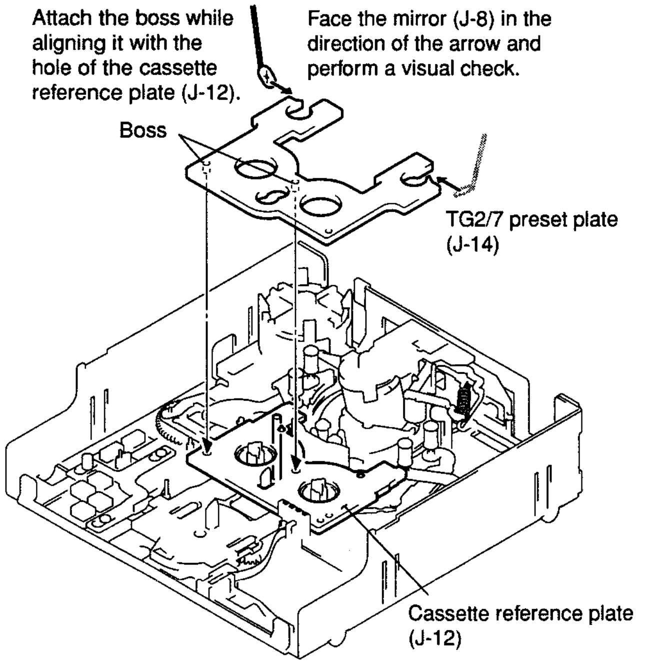

Not good
TG1 or TG8
The guide is too low.
Not good
TG1 or TG8
The guide is too high.
Good
TG1 or TG8
Screwdriver for the tape path (J-9)
The guide is raised.
The guide is lowered.
120°
120°

The normal height is the position where the TC upper flange is rotated by 120° in the direction of lowering the guide from the adjusted height while referring to the figure below.

4-3. TG2/7 HEIGHT CHECK AND ADJUSTMENT

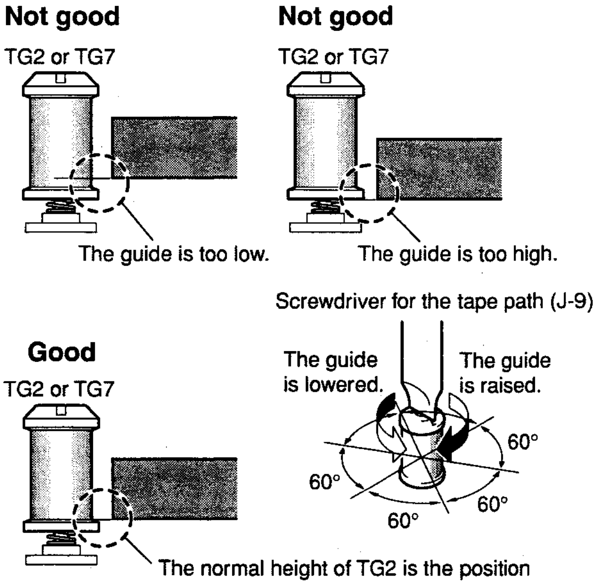
1. Preparation before check

1) Check that the cassette compartment block has already been removed. (Refer to page 6-6.)
2) Set the mechanism deck to the loading end position (TG2 to 7 already moved to the loading end position and the pinch roller is in the unloading position). Alternatively, set the mechanism deck to the "LE position" using the mode selector II. (Refer to page 6-7.)
3) Place the TG2/7 preset plate (J-14).


Attach the boss while aligning it with the hole of the cassette reference plate (J-12).
Face the mirror (J-8) in the direction of the arrow and perform a visual check.
Boss
TG2/7 preset plate (J-14)
Cassette reference plate (J-12)

2. Check and adjustment

Rotate the TG upper flange until the height of the TG2/7 preset plate (J-14) and TG2 or TG7 roller block is the same. Alternatively, rotate the TG upper flange of only TG2 by 60° in the direction of raising the guide from the adjusted height while referring to the figure below.


Not good
TG2 or TG7
The guide is too low.
Not good
TG2 or TG7
The guide is too high.
Good
TG2 or TG7
Screwdriver for the tape path (J-9)
The guide is lowered.
The guide is raised.
60°
60°
60°
60°

The normal height of TG2 is the position where the TC upper flange is rotated by 60° in the direction of raising the guide from the adjusted height while referring to the figure below.
The normal height of TG7 is the current one.

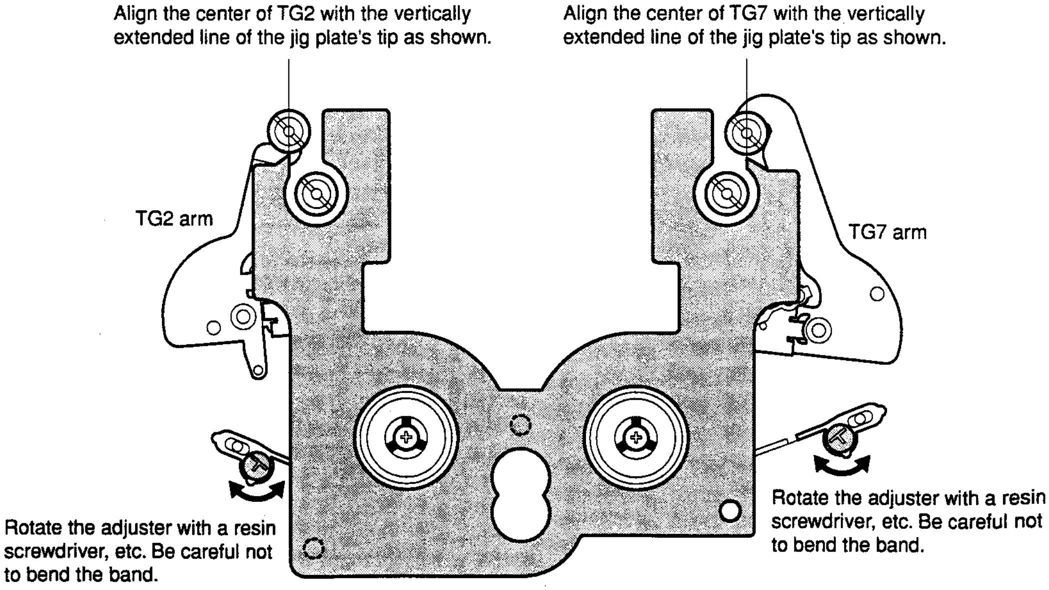
4-4. FWD/RVS POSITION CHECK AND ADJUSTMENT

1. Preparation before check

1) Check that the cassette compartment block has already been removed. (Refer to page 6-6.)
2) Set the mechanism deck to the loading end position (TG2 to 7 already moved to the loading end position and the pinch roller is in the unloading position). Alternatively, set the mechanism deck to the "LE position" using the mode selector II. (Refer to page 6-7.)
3) Place the TG2/7 preset plate (J-14).

2. Check and adjustment

Rotate each adjuster to adjust the TG2/7 position until ⊿ or ⊾ of the TG2/7 preset plate (J-14), TG2 and TG7 are in line.

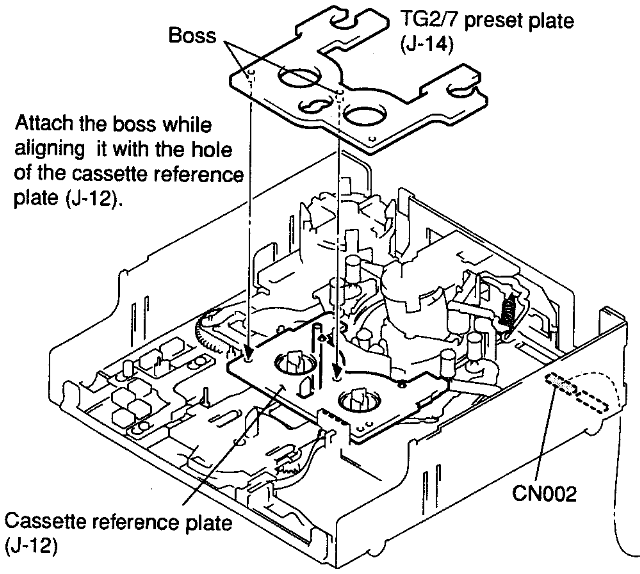

Align the center of TG2 with the vertically extended line of the jig plate's tip as shown.
Align the center of TG7 with the vertically extended line of the jig plate's tip as shown.
TG2 arm
TG7 arm
Rotate the adjuster with a resin screwdriver, etc. Be careful not to bend the band.
Rotate the adjuster with a resin screwdriver, etc. Be careful not to bend the band.

TG2/7 preset plate (J-14)

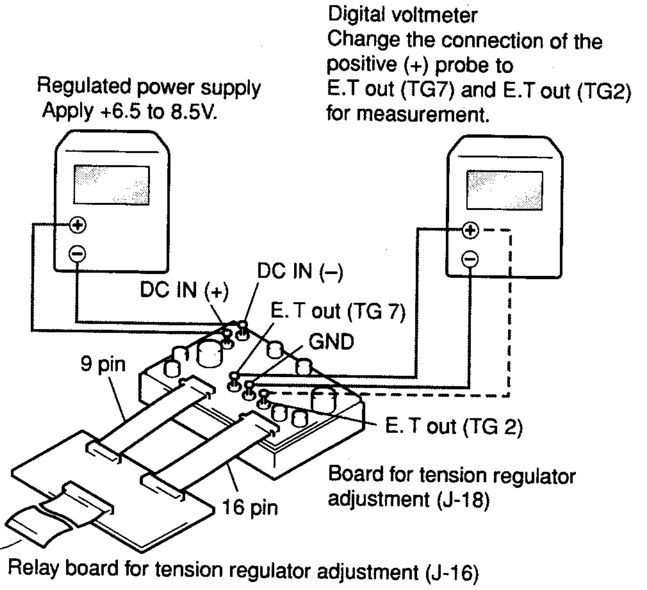
4-5. ELECTRIC TENSION REGULATOR CHECK AND ADJUSTMENT OF TG2/7 ARM

1. Preparation before check

1) Check that the cassette compartment block has already been removed. (Refer to page 6-6.)
2) Set the mechanism deck to the loading end position (TG2 to 7 already moved to the loading end position and the pinch roller is in the unloading position). Alternatively, set the mechanism deck to the "LE position" using the mode selector II (J-15). (Refer to page 6-7.)
3) Attach the cassette reference plate (J-12) and TG2/7 preset plate (J-14). (Refer to page 6-25.)
4) Connect the relay board for tension regulator adjustment (J-16) and other equipment as shown in the figure below.



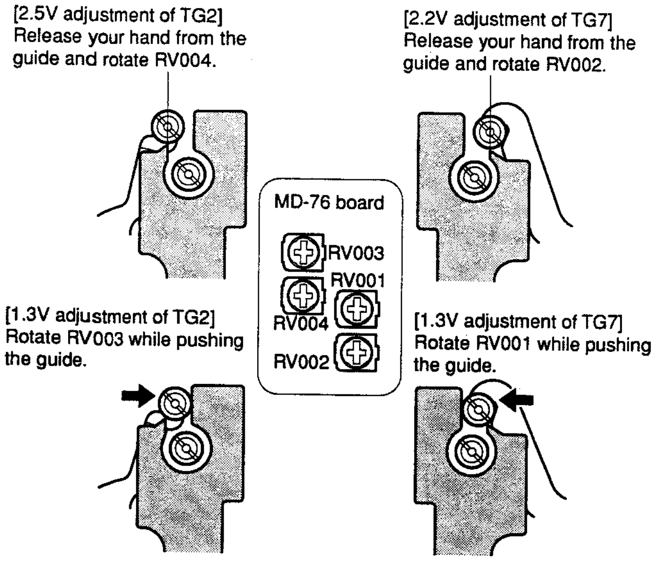
TG2/7 preset plate
(J-14)
Boss
Attach the boss while aligning it with the hole of the cassette reference plate (J-12).
CN002
Cassette reference plate
(J-12)



Digital voltmeter
Change the connection of the positive (+) probe to E.T out (TG7) and E.T out (TG2) for measurement.
Regulated power supply
Apply +6.5 to 8.5V.
⊕
⊖
⊕
⊖
DC IN (+)
DC IN (–)
E. T out (TG 7)
GND
9 pin
E. T out (TG 2)
Board for tension regulator adjustment (J-18)
16 pin
Relay board for tension regulator adjustment (J-16)

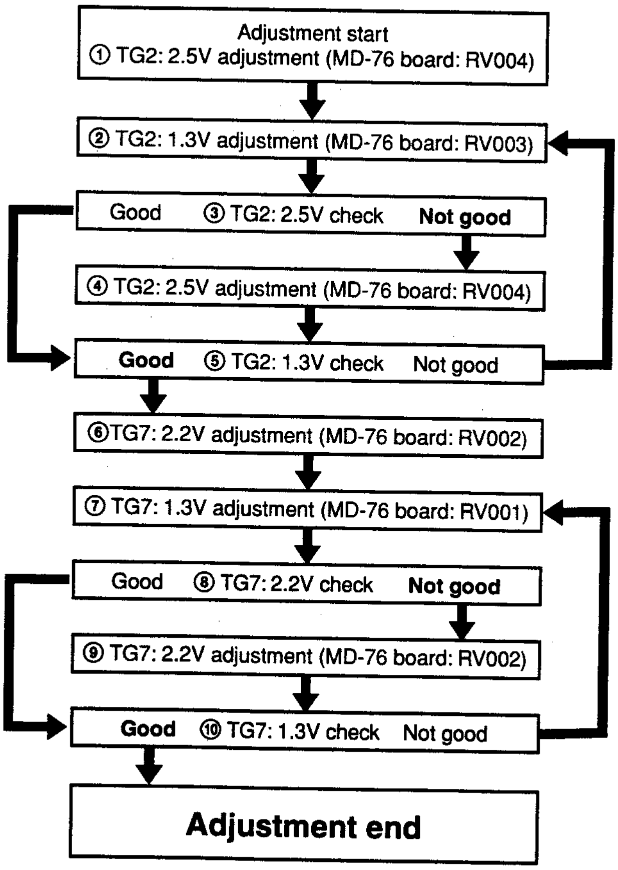
2. Check and adjustment

Connect the positive (+) probe of a digital voltmeter to E.T out (TG2: for measurement of TG2 data) or to E.T out (TG7: for measurement of TG7 data). First, press the guide to the TG2/7 preset plate (J-14), then release your hand from the guide and read the voltmeter value. Adjust RV004 (TG2 side) or RV002 (TG7 side) until the voltmeter measurement is 2.5 ± 0.1 V (TG2 side) or 2.2 ± 0.1 V (TG7 side) when releasing your hand. Then press the guide to the TG2/7 preset plate (J-14). Adjust RV003 (TG2 side) or RV001 (TG7 side) until the voltmeter measurement is 1.3 ± 0.1 V.



[2.5V adjustment of TG2]
Release your hand from the guide and rotate RV004.
[2.2V adjustment of TG7]
Release your hand from the guide and rotate RV002.
MD-76 board
RV003
RV001
RV004
RV002
[1.3V adjustment of TG2]
Rotate RV003 while pushing the guide.
[1.3V adjustment of TG7]
Rotate RV001 while pushing the guide.

[Adjustment order]

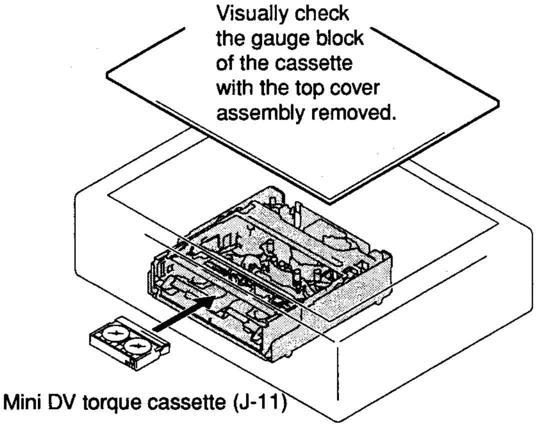


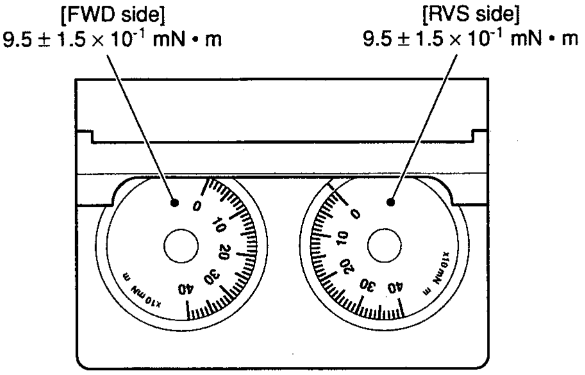
Adjustment start
① TG2: 2.5V adjustment (MD-76 board: RV004)
② TG2: 1.3V adjustment (MD-76 board: RV003)
Good ③ TG2: 2.5V check Not good
④ TG2: 2.5V adjustment (MD-76 board: RV004)
Good ⑤ TG2: 1.3V check Not good
⑥TG7: 2.2V adjustment (MD-76 board: RV002)
⑦ TG7: 1.3V adjustment (MD-76 board: RV001)
Good ⑧ TG7: 2.2V check Not good
⑨ TG7: 2.2V adjustment (MD-76 board: RV002)
Good ⑩ TG7: 1.3V check Not good
Adjustment end

4-6. FWD/RVS BACK TENSION CHECK AND ADJUSTMENT

1. Preparation before check

Mount the mechanism deck in the main unit, connect all the connectors, then insert the mini DV torque cassette (J-11) into the mechanism block.


Visually check the gauge block of the cassette with the top cover assembly removed.
Mini DV torque cassette (J-11)

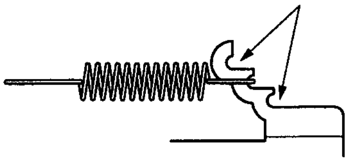

[FWD side]
9.5 ± 1.5 × 10⁻¹ mN • m
[RVS side]
9.5 ± 1.5 × 10⁻¹ mN • m
0
10
20
30
40
x10mN • m
0
10
20
30
40
x10mN • m

2. Check and adjustment

- FWD (TG2) side

The torque value should satisfy 9.5 ± 1.5 × 10^{-1} mN • m while the mini DV torque cassette runs in the FWD mode. If it does not satisfy this, take the following measure.

Re-attach the spring to the upper hook if the measurement value is beyond the specifications or re-attach the spring to the lower hook if the measurement value is below the specifications. Then, repeat the measurement.

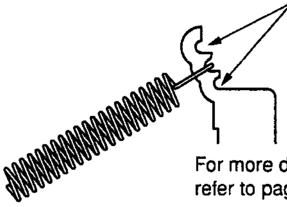


For more details, refer to page 6-23.

- RVS (TG7) side

The torque value should satisfy 9.5 ± 1.5 × 10^{-1} mN • m while the mini DV torque cassette runs in the RVS mode. If it does not satisfy this, take the following measure.

Re-attach the spring to the upper hook if the measurement value is beyond the specifications or re-attach the spring to the lower hook if the measurement value is below the specifications. Then, repeat the measurement.
Be careful that these spring blocks may hinder the FL motor.



For more details, refer to page 6-23.

4-7. PREPARATION FOR ADJUSTMENT AND TAPE PATH CHECK

Preparation before adjustment (connection and setting)

1. Mount the mechanism deck in the main unit.
   (Connect all the connectors.)

2. Clean the tape running side.
   (Refer to "6-1-2. Periodic check".)

3. Connect an oscilloscope to VD-036 board CN4002 via the CPC-8 jig (J-6082-388-A)(J-23).
   Channel 1: VD-036 board, CN4002 Pin ⑬ (Note)
   External trigger: VD-036 board, CN4002 Pin ⑮

Note: Connect a 75 Ω resistor between pins ⑬ of CN4002 and ② (GND).
75 Ω resistor (Parts code: 1-247-804-11)

4. Connect the adjustment remote commander (J-1, J-2) to the LANC jack.

5. Turn the HOLD switch of the adjustment remote commander to the ON position. (Set the slide switch to SERVICE)

6. Select page: 3, address: 33, set data: 08 and press the PAUSE (Write) button.

7. Select page: 3, address: 26, set data: 31 and press the PAUSE (Write) button.

Procedure after operations

1. Connect the adjustment remote commander to the LANC jack.

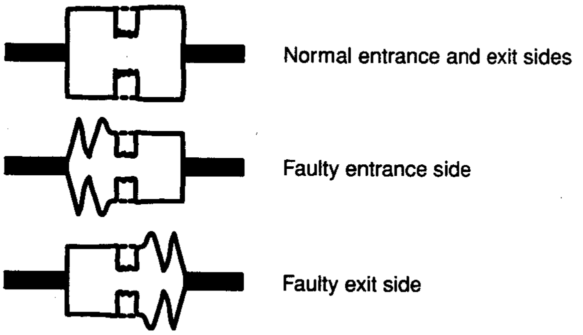
2. Turn the HOLD switch of the adjustment remote commander to the ON position. (Set the slide switch to SERVICE)

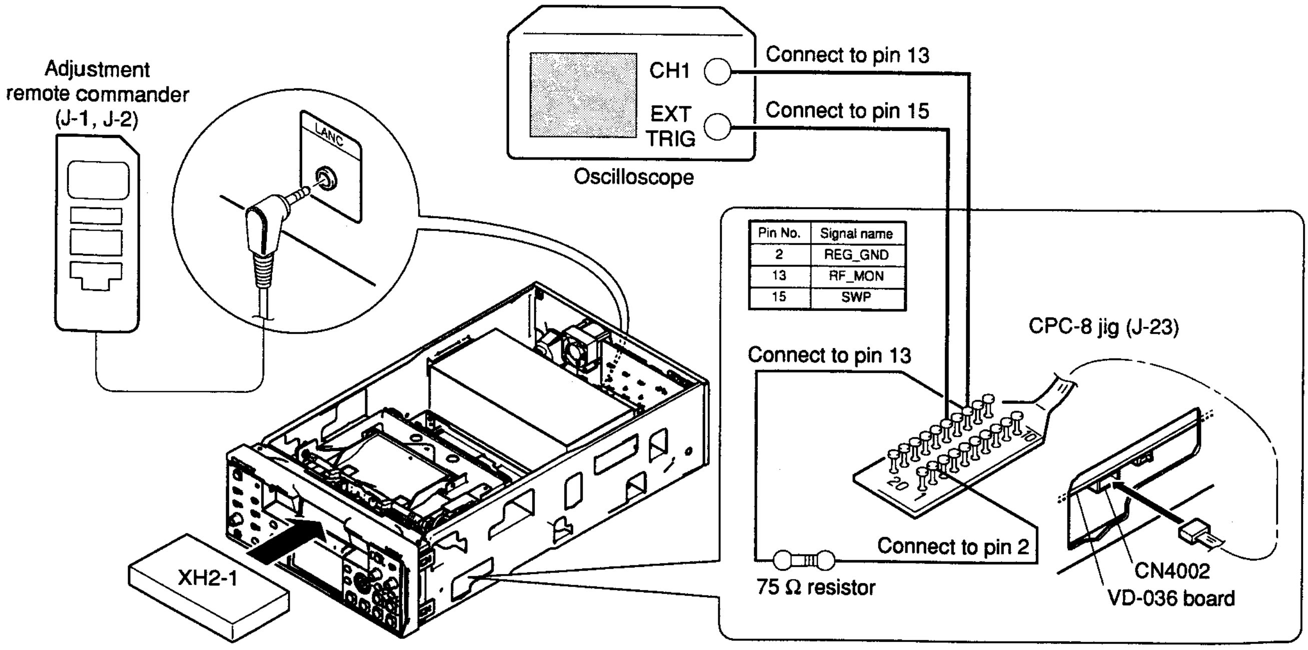
3. Select page: 3, address: 33, set data: 00 and press the PAUSE (Write) button.

4. Select page: 3, address: 26, set data: 00 and press the PAUSE (Write) button.

Tape path check (checking the RF waveform)

Play back the tracking tape (J-10) and check the states at the entrance and exit of the RF waveform. If it is not flat at either side, perform the adjustments from Adjustment Start-4 in the flowchart on page 6-23.


Normal entrance and exit sides
Faulty entrance side
Faulty exit side


Adjustment remote commander (J-1, J-2)
LANC
CH1
EXT TRIG
Connect to pin 13
Connect to pin 15
Oscilloscope
CPC-8 jig (J-23)
Connect to pin 13
20
10
Connect to pin 2
75 Ω resistor
CN4002
VD-036 board
XH2-1

Pin No.	Signal name
2	REG_GND
13	RF_MON
15	SWP

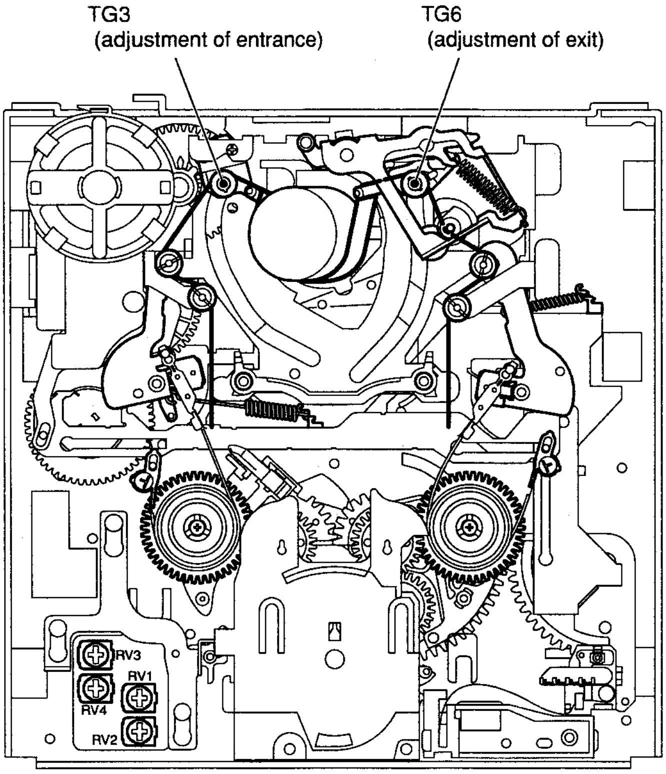
4-8. TRACK ADJUSTMENT AND CHECK (Checking the RF Waveform)

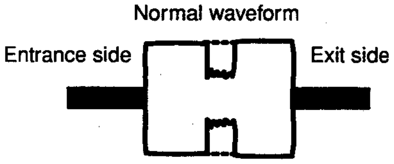
• Checking the RF waveform

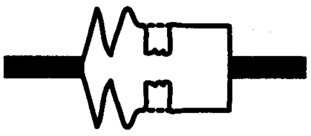
Check that the RF waveforms at both the entrance and exit are flat while the tracking tape (J-10) runs in the PLAY mode.

• If not flat

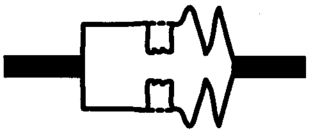
If the waveform at the entrance is bad, rotate TG3. If the waveform at the exit is bad, rotate TG6 to flatten the waveform.


TG3
(adjustment of entrance)
TG6
(adjustment of exit)
RV3
RV1
RV4
RV2


Normal waveform
Entrance side
Exit side



If the waveform at the entrance is bad, rotate TG3 to adjust the waveform.



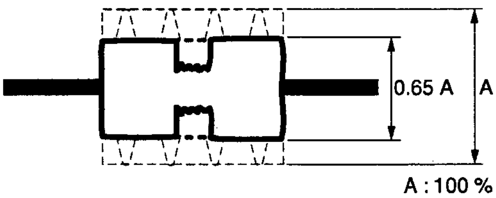
If the waveform at the exit is bad, rotate TG6 to adjust the waveform.

4-9. TRACK CHECK

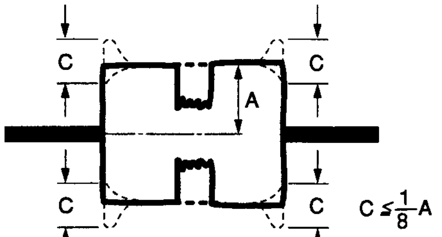
• Check

The difference between the maximum value and minimum value of the waveform amplitude during playback of the tracking tape (J-10) in the FWD mode should be 30% or less of the waveform amplitude during the CUE (or REV) mode (which is taken as 100% as shown). At the same time, there must not exist too much fluctuation of waveform amplitude.

Tracking waveform check -1

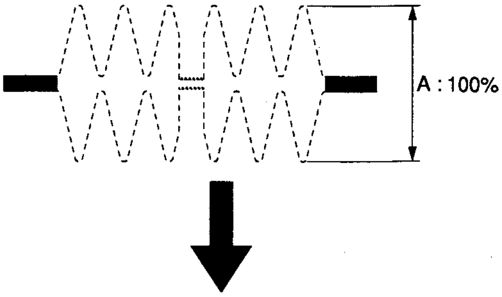


Tracking waveform check -2

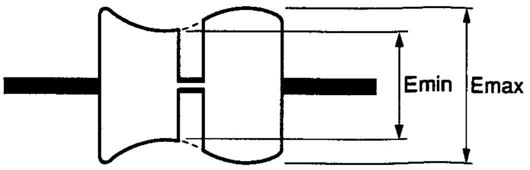

C
C
A
C
C
$C \leq \frac{1}{8}A$

The waveform should not change sharply.

[Waveform in CUE or REV mode]



[Waveform in FWD mode]



Emin: Minimum value
Emax: Maximum value

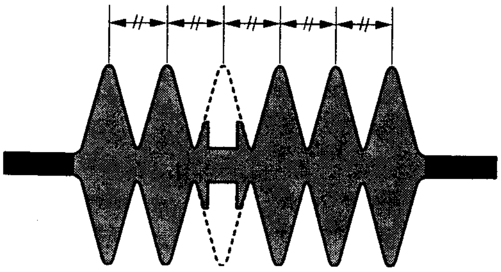
(Emin - Emax) $\leq$ 30% or $(\frac{3}{10}A)$

4-10. CUE/REV CHECK

• Check

Check that the intervals of the waveform peaks are consistent while the tracking tape (J-10) runs in the CUE mode or REV mode.

[Waveform in CUE or REV mode]



The intervals of the waveform peaks must be consistent.

• If not even

If the waveform peaks are not even, perform Section 4-8, "Tacking adjustment".

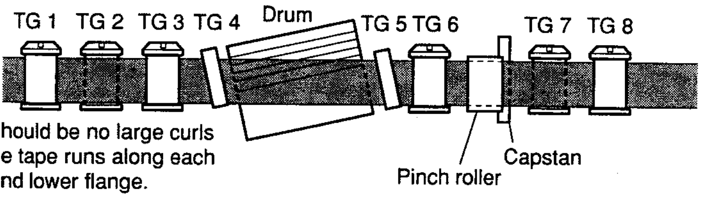
4-11. CURL CHECK AND ADJUSTMENT

• Check

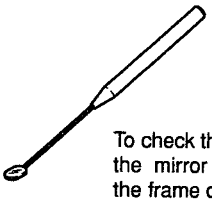
Check that the tape runs along each upper and lower flange while the tracking tape (J-10) runs in the CUE or REV mode. Also check that there are no large curls on each tape guide and pinch roller.

• If the curl is large

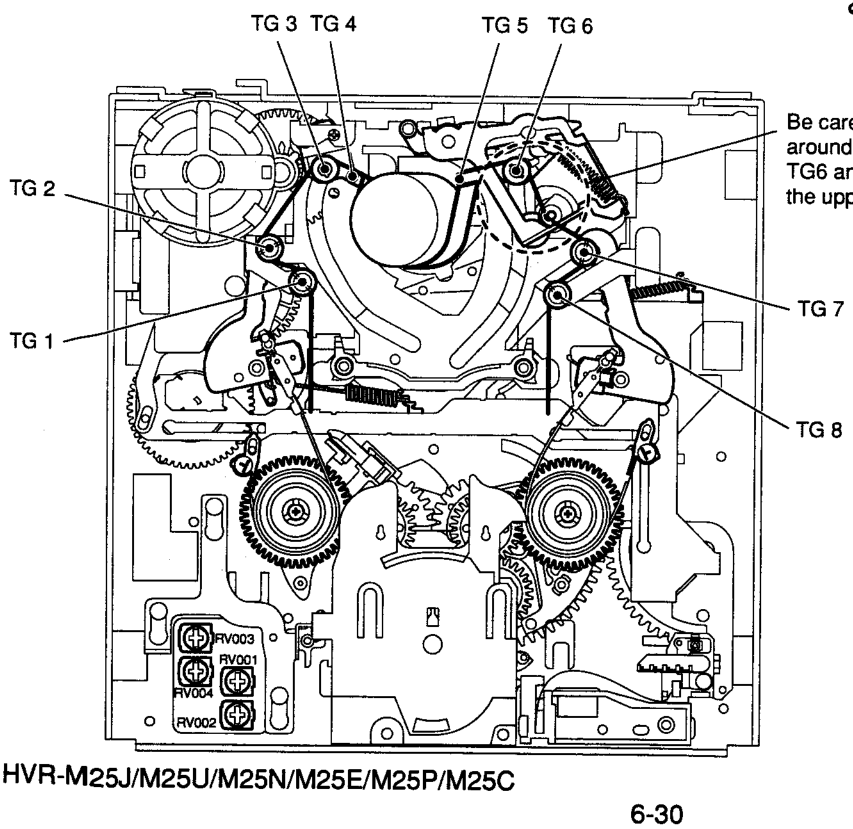
Perform the adjustment from Adjustment Start -3 (TG7 side) of the flowchart on page 6-23 again.



There should be no large curls while the tape runs along each upper and lower flange.



To check the tape path visually, use the mirror (J-8) to facilitate check as the frame of the cassette compartment hinders operations.



Be careful that there are often large curls around the capstan and pinch roller between TG6 and TG7. If there are large curls, rotate the upper flange of TG7 to remove the curls.

4-12. RISING CHECK

• Check

Check that when the tracking tape (J-10) is switched from the STOP, CUE, REV, FF, REW modes to the PLAYBACK mode, the waveform rises horizontally within 2 seconds. (Perform this 2 or 3 times.)

• Check after checking rising

- Check that the tape loads and unloads smoothly.
- Play a self-recorded or already recorded tape, and check that the sound and images are normal.

STOP → PLAYBACK

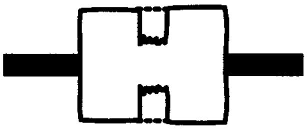
CUE → PLAYBACK

REV → PLAYBACK

FF → PLAYBACK

REW → PLAYBACK

When switching the modes, the waveform should rise horizontally within 2 seconds.



6-2. VIDEO SECTION ADJUSTMENTS

2-1. PREPARATIONS BEFORE ADJUSTMENTS

Use the following measuring instruments for video section adjustments.

2-1-1. Precautions on Adjusting

Note: Before performing the adjustment, check the data of page: 0, address: 10 is "00". If not, select page: 0, address: 00, and set data "00".

2-1-2. Adjusting Connectors

The measuring point of the playback RF signal is CN4002 of VD-036 board. Connect the measuring instruments via the CPC-8 jig (J-6082-388-A). Refer to "MECHANISM SECTION ADJUSTMENT" for the measuring method. The following table lists the pin numbers and signal names of CN4002.

Pin No.	Signal Name	Pin No.	Signal Name
1	EVF_COM_DC (N.C.)	2	REG_GND
3	REG_GND	4	MT_5.5V
5	EXT_DA (N.C.)	6	REG_GND
7	EVF_VCO (N.C.)	8	MS_LED_ON
9	EVF_VG (N.C.)	10	MS_BS
11	PSIG (N.C.)	12	MS_SCLK
13	RF_MON	14	MS_VCC_ON
15	SWP	16	XMS_IN
17	FRRV	18	MS_DIO
19	REC_CRRT1 (N.C.)	20	REC_CRRT0 (N.C.)

Table. 6-2-1

2-1-3. Connecting the Equipment

Connect the measuring instruments as shown in Fig. 6-2-1, and perform the adjustments.

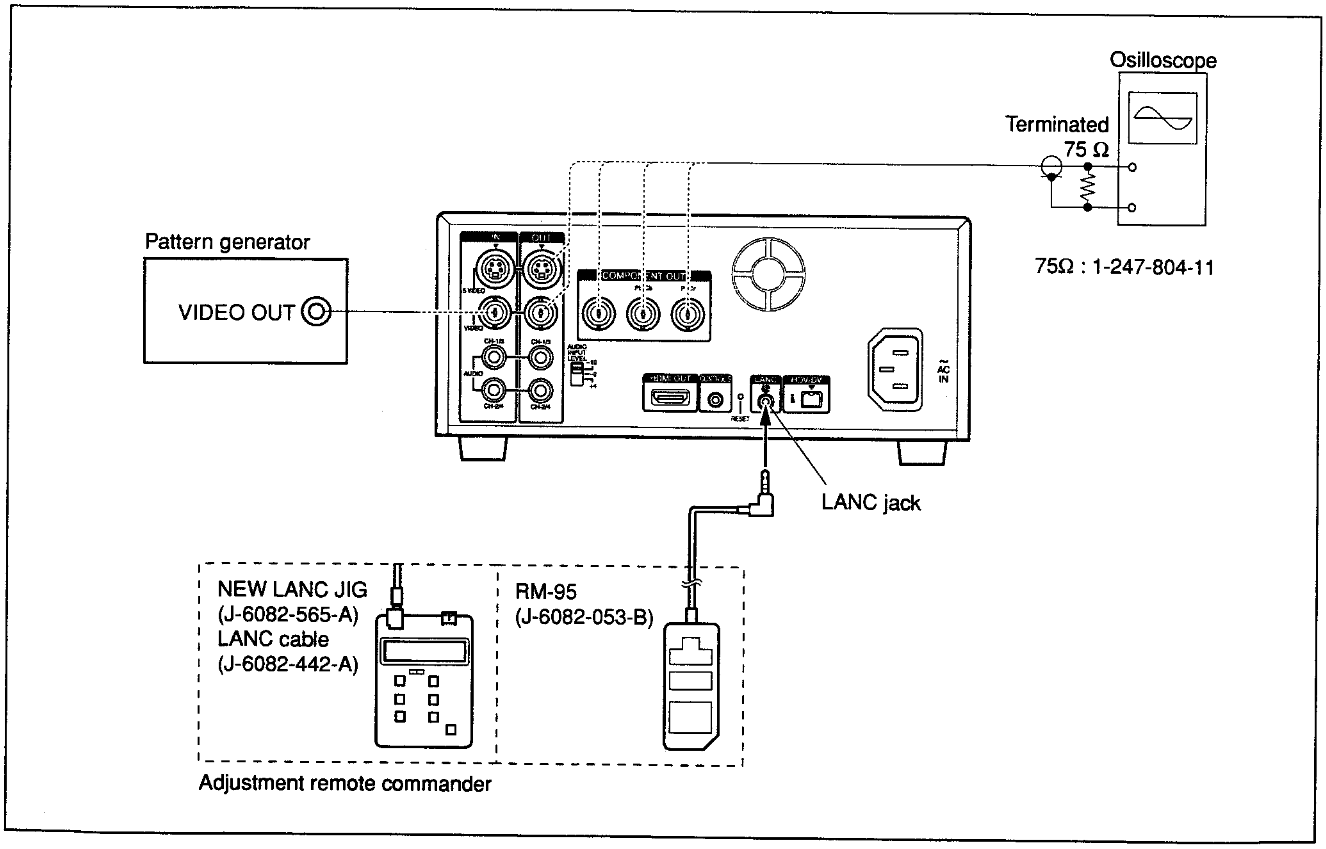

Osilloscope
Terminated
75 Ω
75Ω : 1-247-804-11
Pattern generator
VIDEO OUT
LANC jack
NEW LANC JIG
(J-6082-565-A)
LANC cable
(J-6082-442-A)
RM-95
(J-6082-053-B)
Adjustment remote commander

Fig. 6-2-1

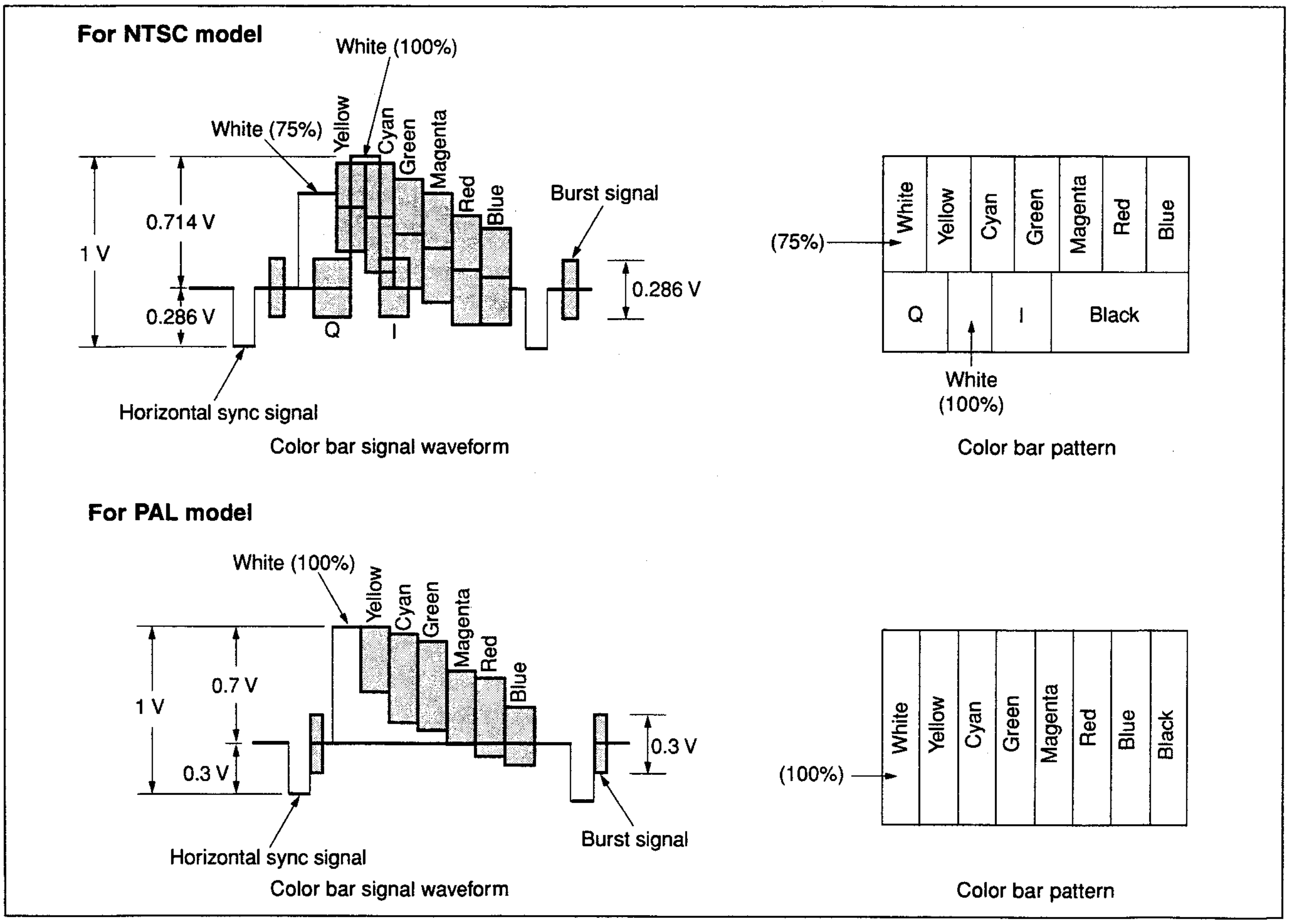
2-1-4. Alignment Tapes

Use the alignment tapes shown in the following table.
Use tapes specified in the signal column of each adjustment.

Name	Use
Tracking standard (XH2-1)	Tape path adjustment
SW/OL standard (XH2-3)	Switching position adjustment
Audio operation check (XH5-3(NTSC), XH5-3P(PAL))	Audio system adjustment
System operation check (XH5-5(NTSC), XH5-5P(PAL))	Operation check

Fig. 6-2-2 shows the 75% color bar signals recorded on the alignment tape for Audio Operation Check.

Note: Measure with video terminal (Terminated at 75 Ω)



For NTSC model
White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst signal
1 V
0.714 V
0.286 V
0.286 V
Q
I
Horizontal sync signal
Color bar signal waveform
(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Q
I
Black
White (100%)
Color bar pattern
For PAL model
White (100%)
Yellow
Cyan
Green
Magenta
Red
Blue
1 V
0.7 V
0.3 V
0.3 V
Horizontal sync signal
Burst signal
Color bar signal waveform
(100%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Black
Color bar pattern

Fig. 6-2-2 Color bar signal of alignment tapes

2-1-5. Input/output Level and Impedance

AUDIO jacks

IN	Pin jack: –10/–2/+4 dBu Impedance: Minimum 47 kΩ (kilo ohms), unbalanced Maximum input level: –10: +18 dBu (approx. 6 Vrms) –2: +24 dBu (approx. 12.5 Vrms) +4: +30 dBu (approx. 25 Vrms)
OUT	Pin jack Impedance: Maximum 1 kΩ (kilo ohms) Output level: 47 kΩ (kilo ohms) loading, unbalanced –10 dBu (= full bit –20 dB) 60i system –10 dBu (= full bit –18 dB) 50i system
PHONES	Stereo minijack (ø 3.5), 8 Ω (ohms) loading

VIDEO jacks

IN/OUT	BNC type, unbalanced 1.0 Vp-p (75 Ω (ohms), sync negative) Sync signal: 0.286 Vp-p (60i/NTSC) 0.3 Vp-p (50i/PAL) Burst signal: 0.286 Vp-p (60i/NTSC) 0.3 Vp-p (50i/PAL)

S VIDEO jacks

IN/OUT	Mini DIN 4-pin, unbalanced Luminance signal: 1.0 Vp-p (75 Ω (ohms), sync negative) Sync signal: 0.286 Vp-p (60i/NTSC) 0.3 Vp-p (50i/PAL) Chrominance signal: 0.286 Vp-p (60i/NTSC) (burst, 75 Ω (ohms)) 0.3 Vp-p (50i/PAL) (burst, 75 Ω (ohms))

HDMI OUT jack

Video	Type A (19 pin) 480i, 576i, 480p, 576p, 1080i, 720p
Audio	2 channel liner PCM 48 kHz/16 bits

COMPONENT OUT jacks

OUT	BNC type

Output at 480i NTSC

With [BETACAM] selected in [IN/OUT REC] menu

Y: 1.0 Vp-p
(with 0.286 Vp-p sync negative, output impedance 75 Ω (ohms), unbalanced)
Pb/Cb/B-Y, Pr/Cr/R-Y: 0.7 Vp-p
(output impedance 75 Ω (ohms), unbalanced)
(75% color bars with 7.5 IRE setup)

With [SMPTE] selected in [IN/OUT REC] menu

Y: 1.0 Vp-p
(with 0.3 Vp-p sync negative, output impedance 75 Ω (ohms), unbalanced)
Pb/Cb/B-Y, Pr/Cr/R-Y: 0.7 Vp-p
(output impedance 75 Ω (ohms), unbalanced)
(100% color bars with no setup)

Output with other settings

Y: 1.0 Vp-p
(output impedance 75 Ω (ohms), unbalanced)
Pb/Cb/B-Y, Pr/Cr/R-Y: 0.7 Vp-p
(output impedance 75 Ω (ohms), unbalanced)
(100% color bars with no setup)
480i/480p:
Y: with 0.3 Vp-p sync negative
1080i/720p:
Y/Pb/Pr: with 0.6 Vp-p 3-level sync

i HDV/DV jack

i.LINK (IEEE1394, 4-pin connector S100)

Remote control

LANC	Stereo mini-minijack (ø 2.5)
CONTROL S IN	Stereo minijack (ø 3.5)

2-2. INITIALIZATION OF 8, 9, A, B, C, D, 13, 18, 1A, 1B, 1C, 1D PAGE DATA

Note : When reading or writing the 13, 18, 1A, 1B, 1C or 1D page data, select page: 0, address: 10, and set data: 01, then sclect 3, 8, A, B, C or D page. The 13, 18, 1A, 1B, 1C or 1D page can be chosen by this data setting.
After reading or writing, reset the data or page: 0, address: 10 to "00".

2-2-1. Initialization of 8, 9, C, 13, 18, 1C, 1D Page Data

1. Initializing of 8, 9, C, 13, 18, 1C, 1D Page Data

Note1: If "Initialization of Pages 8, 9, C, 13, 18, 1C, 1D" is executed, all data on pages 8, 9, C, 13, 18, 1C, 1D are initialized. (Only an individual page cannot be initialized)

Note2 : If the 8, 9, C, 13, 18, 1C, 1D page data has been initialized, the following adjustments need to be performed again.
1) Modification of 8, 9, C, 13, 18, 1C, 1D page data
2) Node unique ID No. input
3) Servo, RF system adjustments
4) Video system adjustments
5) LCD system adjustments

Adjustment Page	8
Adjustment Address	00 to FF
Adjustment Page	9
Adjustment Address	00 to FF
Adjustment Page	C
Adjustment Address	10 to FF
Adjustment Page	13
Adjustment Address	00 to FF
Adjustment Page	18
Adjustment Address	00 to FF
Adjustment Page	1C
Adjustment Address	00 to FF
Adjustment Page	1D
Adjustment Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	3	81		Set the following data, and press PAUSE (Write) button. (Note 3) 00: Initializing all areas 01: Initializing other than adjustment address
4	3	80	0C	Press PAUSE (Write) button.
5	3	80		Check the data changes to "1C".
6				Press the RESET button at the rear panel of the unit using a thin and long pin.
7	3	76		Check the data is "00".
8				Perform "Modification of 8, 9, C, 18, 1C, 1D Page Data".

Note 3: If other than adjustment address was initialized, the adjusted data is not initialized.

2. Modification of 8, 9, C, 13, 18, 1C, 1D Page Data

If the 8, 9, C, 13, 18, 1C, 1D page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) If modification of data on pages 8, 9, C, set data: 00 to page: 0, address: 10, and then select pages 8, 9, C.
3) If modification of data on pages 13, 18, 1C, 1D, set data: 01 to page: 0, address: 10, and then select pages 3, 8, C, D.
   After the modification of data finished, return the data on page: 0, address: 10 to "00".
4) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
5) When changing the data, press the PAUSE (Write) button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
6) If all areas were initialized, check that the data at the addresses for adjustment are initial values (adjustment initial values) listed in the table.
   If different, change them to the adjustment initial values.

Processing after Completing Modification 8, 9, C, 13, 18, 1C, 1D page data:

Order	Page	Address	Data	Procedure
1	7	01	DB	
2	7	00	01	Press PAUSE (Write) button.
3	7	02		Check the data changes to "01".
4				Press the RESET button at the rear panel of the unit using a thin and long pin.

3. 8 Page table

Note 1: Check that the data of page: 0, address: 10 is"00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing of 8, 9, C, 13, 18, 1C, 1D Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 45			Fixed data-1 (Initialized data)
46			Fixed data-2
47, 48			Fixed data-1 (Initialized data)
49			Fixed data-2
4A			
4B to B1			Fixed data-1 (Initialized data)
B2			Fixed data-2
B3			
B4			Fixed data-1 (Initialized data)
B5			Fixed data-2
B6			
B7 to C1			Fixed data-1 (Initialized data)
C2			Fixed data-2
C3			Fixed data-1 (Initialized data)
C4			Fixed data-2
C5 to FF			Fixed data-1 (Initialized data)

4. 9 Page table

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing of 8, 9, C, 13, 18, 1C, 1D Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF			Fixed data-1 (Initialized data)

5. C Page table

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing of 8, 9, C, 13, 18, 1C, 1D Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D Page Data")

Address	Initial value		Remark
	NTSC	PAL	
10	EE	EE	Switching position adj.
11	00	00	
12	00	00	
13	00	00	
14, 15			Fixed data-1 (Initialized data)
16	E0	E0	CAP FG duty adj.
17 to 42			Fixed data-1 (Initialized data)
43			Fixed data-2
44			
45	8C	8C	LCD automatic adj. (VCO adj.)
46	AA	AA	
47	B5	B5	V-COM adj. (LCD)
48 to 4A			Fixed data-1 (Initialized data)
4B	8C	8C	Transmissive mode white balance adj (LCD)
4C	77	77	
4D	5C	5C	LCD automatic adj. (Contrast adj.)
4E to 53			Fixed data-1 (Initialized data)
54	7F	7F	Sample hold adj. (LCD)
55 to 5F			Fixed data-1 (Initialized data)
60			Fixed data-2
61 to 68			Fixed data-1 (Initialized data)
69			Fixed data-2
6A			
6B to 6D			Fixed data-1 (Initialized data)
6E			Fixed data-2
6F			
70 to 72			Fixed data-1 (Initialized data)
73			Fixed data-2
74, 75			Fixed data-1 (Initialized data)
76	5C	5C	LCD automatic adj. (Contrast adj.)
77 to 89			Fixed data-1 (Initialized data)
8A	67	67	S VIDEO OUT Y level adj. (NTSC)
8B	53	53	S VIDEO OUT chroma level adj. (NTSC)
8C	69	69	
8D to 8F			Fixed data-1 (Initialized data)
90	67	67	S VIDEO OUT Y level adj. (PAL)
91	53	53	S VIDEO OUT chroma level adj. (PAL)
92	69	69	
93	79	79	COMPONENT OUT Y level adj. (D1 SMPTE)
94	31	31	COMPONENT OUT Pb level adj. (D1 SMPTE)
95	32	32	COMPONENT OUT Pr level adj. (D1 SMPTE)
96 to 98			Fixed data-1 (Initialized data)
99	67	67	COMPONENT OUT Y level adj. (D1 BETACAM)
9A	48	48	COMPONENT OUT Pb level adj. (D1 BETACAM)
9B	48	48	COMPONENT OUT Pr level adj. (D1 BETACAM)
9C to FF			Fixed data-1 (Initialized data)

6. 13 Page table

Note 1: If reading/writing data on pages 13, set data: 01 to page: 0, address: 10, and then select pages: 3. By this data setting, the pages 13 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing of 8, 9, C, 13, 18, 1C, 1D Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 03	Fixed data-1 (Initialized data)		
04	08	08	Node unique ID No. input
05	00	00	
06	46	46	
07	01	01	
08	02	02	
09	00	00	
0A	00	00	
0B	00	00	
0C to 12	Fixed data-1 (Initialized data)		
13	Fixed data-2		
14 to 24	Fixed data-1 (Initialized data)		
25	Fixed data-2		
26 to C0	Fixed data-1 (Initialized data)		
C1	Fixed data-2		
C2 to CF	Fixed data-1 (Initialized data)		
D0	Fixed data-2		
D1 to FD	Fixed data-1 (Initialized data)		
FE	Fixed data-2		
FF	Fixed data-1 (Initialized data)		

7. 18 Page table

Note 1: If reading/writing data on pages 18, set data: 01 to page: 0, address: 10, and then select pages: 8. By this data setting, the pages 18 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing of 8, 9, C, 13, 18, 1C, 1D Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 9B	Fixed data-1 (Initialized data)		
9C	Fixed data-2		
9D to EA	Fixed data-1 (Initialized data)		
EB	Fixed data-2		
EC			
ED to FF	Fixed data-1 (Initialized data)		

8. 1C Page table

Note 1: If reading/writing data on pages 1C, set data: 01 to page: 0, address: 10, and then select pages: C. By this data setting, the pages 1C can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to"00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing of 8, 9, C, 13, 18, 1C, 1D Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to B2	Fixed data-1 (Initialized data)		
B3	00	00	Error rate check
B4	00	00	
B5	00	00	
B6	00	00	
B7	00	00	
B8	80	80	
B9	00	00	
BA	00	00	
BB	00	00	
BC	00	00	
BD	00	00	
BE	00	00	
BF	00	00	
C0	00	00	
C1	00	00	
C2	00	00	
C3	80	80	
C4	00	00	
C5	00	00	
C6	00	00	
C7	00	00	
C8	00	00	
C9 to DC	Fixed data-1 (Initialized data)		
DD	Fixed data-2		
DE			
DF to FF	Fixed data-1 (Initialized data)		

9. 1D Page table

Note 1: If reading/writing data on pages 1D, set data: 01 to page: 0, address: 10, and then select pages: D. By this data setting, the pages 1D can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing of 8, 9, C, 13, 18, 1C, 1D Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

2-2-2. Initialization of A, B, D, 1A, 1B Page Data

Note: Check that the data of page: 0, address: 10 is "00".

1. Initializing of A, B, D, 1A, 1B Page Data

Note 1: If the A, B, D, 1A, 1B page data has been initialized, the following adjustments need to be performed again.
1) Modification of A, B, D, 1A, 1B page data

Note 2: NTSC model: HVR-M25J/M25U/M25N
PAL model: HVR-M25E/M25P/M25C

Adjustment Page	A
Adjustment Address	10 to FF
Adjustment Page	B
Adjustment Address	00 to FF
Adjustment Page	D
Adjustment Address	10 to FF
Adjustment Page	1A
Adjustment Address	00 to FF
Adjustment Page	1B
Adjustment Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	7	04		Set the following data 00: NTSC model 01: PAL model
4	7	01		Set the following data 20: Initializing A page 21: Initializing B page 22: Initializing D page 23: Initializing 1A page 24: Initializing 1B page 25: Initializing A and 1A page 26: Initializing B and 1B page 28: Initializing A, B, D, 1A and 1B page
5	7	02	FF	
6	7	00	01	Press PAUSE (Write) button.
7	7	02		Check the data changes to "01".
8				Perform "Modification of A, B, D, 1A, 1B Page Data"

Note 3: The order from 1 to 7 must be performed continuously without turning off the power.

If the power is turned off in the midway of work and then even if "E:20:00" is displayed at the next start of the set, the data on each page can be changed normally.

2. Modification of A, B, D, 1A, 1B Page Data

If the A, B, D, 1A, 1B page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) If modification of data on pages A, B, D, set data: 00 to page: 0, address: 10, and then select pages A, B, D.
3) If modification of data on pages 1A, 1B, set data: 01 to page: 0, address: 10, and then select pages A, B.
After the modification of data finished, return the data on page: 0, address: 10 to "00".
4) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
Note 1: If copy the data built in the different model, the camcorder may not operate.
5) When changing the data, press the PAUSE (Write) button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
6) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification A, B, D, 1A, 1B page data:

Order	Page	Address	Data	Procedure
1	7	01	DB	
2	7	00	01	Press PAUSE (Write) button.
3	7	02		Check the data changes to "01".
4				Press the RESET button at the rear panel of the unit using a thin and long pin.

Note 2: If following symptoms occur after completing of the "Modification A, B, D, 1A, 1B page data", check that the data of the "Fixed data-2" address of A, B, D, 1A, 1B page are same as those of same model of same destination.
1) The power is shut off so that unit cannot operate.

3. A Page table

Note 1: Check that the data of page: 0, address: 10 is"00".

Note 2: Fixed data-1: Initialized data. (Refer to"1. Initializing of A, B, D, 1A, 1B Page Data")
Fixed data-2: Modified data. (Refer to"2. Modification of A, B, D, 1A, 1B Page Data")

Address	Initial value		Remark
	NTSC	PAL	
10 to 17			Fixed data-1 (Initialized data)
18			Fixed data-2
19 to 55			Fixed data-1 (Initialized data)
56			Fixed data-2
57 to 7B			Fixed data-1 (Initialized data)
7C			Fixed data-2
7D			
7E			
7F			
80 to FF			Fixed data-1 (Initialized data)

4. B Page table

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing of A, B, D, 1A, 1B Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of A, B, D, 1A, 1B Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF			Fixed data-1 (Initialized data)

5. D Page table

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing of A, B, D, 1A, 1B Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of A, B, D, 1A, 1B Page Data")

Address	Initial value		Remark
	NTSC	PAL	
10 to 15			Fixed data-1 (Initialized data)
16			Fixed data-2
17			
18 to 56			Fixed data-1 (Initialized data)
57			Fixed data-2
58 to79			Fixed data-1 (Initialized data)
7A			Fixed data-2
7B to FF			Fixed data-1 (Initialized data)

6. 1A Page table

Note 1: If reading/writing data on pages 1A, set data: 01 to page: 0, address: 10, and then select pages: A. By this data setting, the pages 1A can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing of A, B, D, 1A, 1B Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of A, B, D, 1A, 1B Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 64			Fixed data-1 (Initialized data)
65			Fixed data-2
66 to FF			Fixed data-1 (Initialized data)

7. 1B Page table

Note 1: If reading/writing data on pages 1B, set data: 01 to page: 0, address: 10, and then select pages: B. By this data setting, the pages 1B can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing of A, B, D, 1A, 1B Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of A, B, D, 1A, 1B Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF			Fixed data-1 (Initialized data)

2-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Node Unique ID No. Input

Note 1: Perform "1-2. Input of Serial No." if the data on page 13 has been cleared and original node unique ID No. is uncertain.
Usually, read the data on page 13 before repair, and write it after repair.

Note 2: If reading/writing data on pages 13, set data: 01 to page: 0, address: 10, and then select pages: 3. By this data setting, the pages 13 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

1-1. Input of Company ID

Write the company ID to the EEPROM (nonvolatile memory).

Page	13
Address	04, 05, 06, 07, 08

Input method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 10, and set data: 01.
3) Select page: 3 (13), and enter the following data.

Note 3: Each time the data is set, press the PAUSE (Write) button on the adjusting remote commander.

Address	Data
04	08
05	00
06	46
07	01
08	02

4) Select page: 0, address: 10, and set data: 00.
5) Select page: 0, address: 01, and set data: 00.

1-2. Input of Serial No.

Write the serial No. and model code to the EEPROM (nonvolatile memory).

In writing the serial No., a decimal number should be converted into a hexadecimal number

Page	13
Address	09, 0A, 0B

1) Select page: 0, address: 01, and set data: 01.
2) Read the serial No. from the model name label, and it is assumed to be D_1.
   Example: If serial No. is "77881",
   $D_1 = 77881$
3) From Table 6-2-2, obtain D_2 and H_1 that correspond to D_1.
   Example: If $D_1 = 77881$,
   $D_2 = D_1 - 65536 = 12345$
   $H_1 = FE$

D_1 (decimal)	D_2 (decimal)	H_1 (hexadecimal) (Service model code)
00001 to 65535	D_1	FE
65536 to 131071	$D_1 - 65536$	FE
131072 to196607	$D_1 - 131072$	FE
196608 to 262143	$D_1 - 196608$	FE
262144 to 327679	$D_1 - 262144$	FE
327680 to 393215	$D_1 - 327680$	FE
393216 to 458751	$D_1 - 393216$	FE
458752 to 524287	$D_1 - 458752$	FE
524288 to 589823	$D_1 - 524288$	FE
589824 to 655359	$D_1 - 589824$	FE
655360 to 720895	$D_1 - 655360$	FE
720896 to 786431	$D_1 - 720896$	FE
786432 to 851967	$D_1 - 786432$	FE
851968 to 917503	$D_1 - 851968$	FE
917504 to 983039	$D_1 - 917504$	FE
983040 to 999999	$D_1 - 983040$	FE

Table 6-2-2

4) Enter H_1 to address: 09 on page: 13.
   Example: If $H_1 = FE$,
   Select page: 0, address: 10, and set data: 01.
   Select page: 3 (13), address: 09, and set data: FE, then press the PAUSE (Write) button.
5) From Table 6-2-3, obtain the maximum decimal number less than D_2, and it is assumed to be D_3.
   Example: If $D_2 = 12345$.
   $D_3 = 12288$
6) From Table 6-2-3, obtain a hexadecimal number that corresponds to D_3, and it is assumed to be H_3.
   Example: If $D_3 = 12288$,
   $H_3 = 3000$
7) Caluculate D_4 using following equations (decimal caluculation). ($0 \leqq D_4 \leqq 225$)
   $D_4 = D_2 - D_3$
   Example: If $D_2 = 12345$ and $D_3 = 12288$,
   $D_4 = 12345 - 12288 = 57$
8) Convert D_4 into a hexadecimal number to obtain H_4. (See Table 6-3-1 "Hexadecimal - decimal conversion table" in 6-3. Service Mode)
   Example: If $D_4 = 57$,
   $H_4 = 39$
9) Enter higher two digits of H_3 to address: 0A on page: 13.
   Example: If $H_3 = 3000$,
   Select page: 0, address: 10, and set data: 01.
   Select page: 3 (13), address: 0A, and set data: 30, then press the PAUSE (Write) button.
10) Enter H_4 to address: 0B on page: 13.
    Example: If $H_4 = 39$,
    Select page: 0, address: 10, and set data: 01.
    Select page: 3 (13), address: 0B, and set data: 39, then press the PAUSE (Write) button.
11) Select page: 0, address: 10, and set data: 00.
12) Select page: 0, address: 01, and set data: 00.

D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3
0	0000	8192	2000	16384	4000	24576	6000	32768	8000	40960	A000	49152	C000	57344	E000
256	0100	8448	2100	16640	4100	24832	6100	33024	8100	41216	A100	49408	C100	57600	E100
512	0200	8704	2200	16896	4200	25088	6200	33280	8200	41472	A200	49664	C200	57856	E200
768	0300	8960	2300	17152	4300	25344	6300	33536	8300	41728	A300	49920	C300	58112	E300
1024	0400	9216	2400	17408	4400	25600	6400	33792	8400	41984	A400	50176	C400	58368	E400
1280	0500	9472	2500	17664	4500	25856	6500	34048	8500	42240	A500	50432	C500	58624	E500
1536	0600	9728	2600	17920	4600	26112	6600	34304	8600	42496	A600	50688	C600	58880	E600
1792	0700	9984	2700	18176	4700	26368	6700	34560	8700	42752	A700	50944	C700	59136	E700
2048	0800	10240	2800	18432	4800	26624	6800	34816	8800	43008	A800	51200	C800	59392	E800
2304	0900	10496	2900	18688	4900	26880	6900	35072	8900	43264	A900	51456	C900	59648	E900
2560	0A00	10752	2A00	18944	4A00	27136	6A00	35328	8A00	43520	AA00	51712	CA00	59904	EA00
2816	0B00	11008	2B00	19200	4B00	27392	6B00	35584	8B00	43776	AB00	51968	CB00	60160	EB00
3072	0C00	11264	2C00	19456	4C00	27648	6C00	35840	8C00	44032	AC00	52224	CC00	60416	EC00
3328	0D00	11520	2D00	19712	4D00	27904	6D00	36096	8D00	44288	AD00	52480	CD00	60672	ED00
3584	0E00	11776	2E00	19968	4E00	28160	6E00	36352	8E00	44544	AE00	52736	CE00	60928	EE00
3840	0F00	12032	2F00	20224	4F00	28416	6F00	36608	8F00	44800	AF00	52992	CF00	61184	EF00
4096	1000	12288	3000	20480	5000	28672	7000	36864	9000	45056	B000	53248	D000	61440	F000
4352	1100	12544	3100	20736	5100	28928	7100	37120	9100	45312	B100	53504	D100	61696	F100
4608	1200	12800	3200	20992	5200	29184	7200	37376	9200	45568	B200	53760	D200	61952	F200
4864	1300	13056	3300	21248	5300	29440	7300	37632	9300	45824	B300	54016	D300	62208	F300
5120	1400	13312	3400	21504	5400	29696	7400	37888	9400	46080	B400	54272	D400	62464	F400
5376	1500	13568	3500	21760	5500	29952	7500	38144	9500	46336	B500	54528	D500	62720	F500
5632	1600	13824	3600	22016	5600	30208	7600	38400	9600	46592	B600	54784	D600	62976	F600
5888	1700	14080	3700	22272	5700	30464	7700	38656	9700	46848	B700	55040	D700	63232	F700
6144	1800	14336	3800	22528	5800	30720	7800	38912	9800	47104	B800	55296	D800	63488	F800
6400	1900	14592	3900	22784	5900	30976	7900	39168	9900	47360	B900	55552	D900	63744	F900
6656	1A00	14848	3A00	23040	5A00	31232	7A00	39424	9A00	47616	BA00	55808	DA00	64000	FA00
6912	1B00	15104	3B00	23296	5B00	31488	7B00	39680	9B00	47872	BB00	56064	DB00	64256	FB00
7168	1C00	15360	3C00	23552	5C00	31744	7C00	39936	9C00	48128	BC00	56320	DC00	64512	FC00
7424	1D00	15616	3D00	23808	5D00	32000	7D00	40192	9D00	48384	BD00	56576	DD00	64768	FD00
7680	1E00	15872	3E00	24064	5E00	32256	7E00	40448	9E00	48640	BE00	56832	DE00	65024	FE00
7936	1F00	16128	3F00	24320	5F00	32512	7F00	40704	9F00	48896	BF00	57088	DF00	65280	FF00

Note: D_3: Decimal
H_3: Hexadecimal

Table 6-2-3

2-4. SERVO AND RF SYSTEM ADJUSTMENTS

Before perform the servo and RF system adjustments, check that the specified values of "Origin Oscillation check" of "2-5. VIDEO SYSTEM ADJUSTMENTS" is satisfied.
Check that the data of page: 0, address: 10 is "00". If not, select page: 0, address: 10, and set the data "00".

Adjusting Procedure:

1. CAP FG duty adjustment
2. Switching position adjustment
3. Error rate check

1. CAP FG Duty Adjustment (VD-036 board)

RadarW

Set the CAP FG signal duty cycle to 50% to establish an appropriate capstan servo. If deviated, the uneven rotation of capstan and noise can occur.

Mode	E-E
Signal	No signal
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	16
Specified value	The data of page: 3, address: 03 is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2	0	01	01	
3	3	03	FF	
4	3	01	1B	Press PAUSE (Write) button.
5	3	02		Check the data changes in the following order "1B" → "2B" → "00"
6	3	03		Check the data is "00". (Note 2)
7	0	01	00	

Note 2: If the data is "01", adjustment has errors or the mechanism deck is defective.
If the data is "80", the mechanism deck is in emergency state or the end of tape was detected.

2. Switching Position Adjustment (VD-036 board)

RadarW

Mode	Playback
Signal	SW/OL standard (XH2-3)
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	10, 11, 12, 13
Specified value	The data of page: 3, address: 03 is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1				Insert the SW/OL standard tape and enter the VTR stop mode.
2	0	01	01	
3	C	10	EE	Press PAUSE (Write) button.
4	3	03	FF	
5	3	21		Check the data is "52". (Note 2)
6	3	01	0D	Press PAUSE (Write) button.
7	3	02		Check the data changes to "00".
8	3	03		Check the data is "00". (Note 3)
9	0	01	00	

Note 2: If the data is "92", the tape top being played. After playing the tape for 1 to 2 seconds, stop it, perform step 5 and higher.
If the data is "82", the tape end being played. After rewind the tape, perform step 5 and higher.

Note 3: If bit0 of the data is "1", the EVEN channel is defective.
If bit1 of the data is "1", the ODD channel is defective.
Contents of the defect is see written into page: C, address: 10 and 12. See following table.
(For the bit values, refer to "6-3. SERVICE MODE", "3-4. 4. Bit value discrimination".)
If bit3 of the data is "1", the tape end being played, so rewind the tape and perform the adjustment again.

When the EVEN channel is defective

Data of page: C, address: 10	Contents of defect
EE	Writing into EEP ROM (IC5001) is defective
E8	Adjustment data is out of range
E7	No data is returned from IC3001

When the ODD channel is defective

Data of page: C, address: 12	Contents of defect
EE	Writing into EEP ROM (IC5001) is defective
E8	Adjustment data is out of range
E7	No data is returned from IC3001

3. Error Rate Check (VD-036 board) RadarW

Note: Check that the data of page: 0, address: 10 is “00”.

3-1. Preparations before adjustments

Mode	Recording
Signal	Arbitrary (color bar etc.)

Switch setting

1) HDV/DV SEL (IN/OUT REC menu) .... DV

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	01	
3	C (1C)	0D	CC	Press PAUSE (Write) button.
4	0	10	00	
5				Record the input signal for 2 minutes.

3-2. Error Rate Check

Mode	Playback
Signal	Recorded signal at “Preparations before adjustments”
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	1C
Adjustment Address	B3 to C8
Specified value	The data of page: 3, address: 03 is “00”

Note 1: If reading/writing data on pages 1C, set data: 01 to page: 0, address: 10, and then select pages: C. By this data setting, the pages 1C can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Initial Value of Page 1C: Address: B3 to C8

Address	Initial value	Address	Initial value	Address	Initial value
B3	00	BB	00	C3	80
B4	00	BC	00	C4	00
B5	00	BD	00	C5	00
B6	00	BE	00	C6	00
B7	00	BF	00	C7	00
B8	80	C0	00	C8	00
B9	00	C1	00		
BA	00	C2	00		

Table 6-2-4

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2				Check that the data of page: 1C, address: B3 to C8 is the initial value. (See Table 6-2-4)
3				Playback the recorded signal at “Preparations before adjustments”.
4	3	03	FF	
5	3	01	40	Press PAUSE (Write) button.
6	3	02		Check the data changes to “00”.
7	3	03		Check the data is “00”. (Note 2)
8				Perform “Processing after Completing Adjustments”.

Note 2: If the data is other than “00”, Error rate is abnormal. For the contents of the abnormality, see the following table.

Data of page: 3, address: 03	Contents of defect
01	EVEN channel is abnormal.
02	ODD channel is abnormal.
03	EVEN channel and ODD channel are abnormal.

Note 3: If Error rate is abnormal, Check the use tape, clean the tape running surface. And after inputting initial values to page 1C: address: B3 to C8, perform re-adjustment. (See Table 6-2-4)

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	01	
3	C (1C)	0D	00	Press PAUSE (Write) button.
4	0	10	00	
5	0	01	00	

2-5. VIDEO SYSTEM ADJUSTMENTS

Before perform the video system adjustments, check that the data of page: 0, address: 10 is "00".
If not, select page: 0, address: 10, and set the data "00".

Adjusting Procedure:

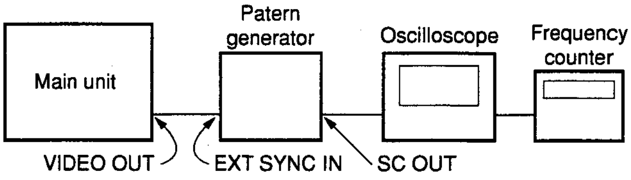
1) Origin oscillation check
2) S VIDEO OUT Y level adjustment
3) S VIDEO OUT chroma level adjustment
4) VIDEO OUT level check
5) VIDEO OUT level check (E-E)
6) COMPONENT OUT Y level adjustment (D1 SMPTE)
7) COMPONENT OUT Pb level adjustment (D1 SMPTE)
8) COMPONENT OUT Pr level adjustment (D1 SMPTE)
9) COMPONENT OUT Y level adjustment (D1 BETACAM)
10) COMPONENT OUT Pb level adjustment (D1 BETACAM)
11) COMPONENT OUT Pr level adjustment (D1 BETACAM)

1. Origin Oscillation Check (VD-036 board)

Check the frequency of the clock for synchronization.
If deviated, the synchronization will be disrupted and the color will become inconsistent.

Mode	E-E
Signal	No signal
Measurement Point	VIDEO OUT jack
Measuring Instrument	Pattern generator (External synchronization mode) Oscilloscope Frequency counter (Note)
Specified Value	f = 3579545 ± 72 Hz (NTSC) f = 4433619 ± 89 Hz (PAL)

Note: Connection of equipment



Checking method:

1) Set the 60i/50i SEL (OTHERS menu) to "60i".
2) Check that the frequency (f) satisfies the NTSC specified value.
3) Set the 60i/50i SEL (OTHERS menu) to "50i".
4) Check that the frequency (f) satisfies the PAL specified value.

2. S VIDEO, VIDEO OUT Adjustment

2-1. Preparations

Perform the following data setting before the "S VIDEO, VIDEO OUT Adjustment".

Switch setting

1) DISPLAY OUTPUT switch .... OFF

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	01	
3	8 (18)	00	01	Press PAUSE (Write) button.
4	8 (18)	01	60	Press PAUSE (Write) button.
5	C (1C)	0F	10	Press PAUSE (Write) button.
6	8 (18)	06	55	Press PAUSE (Write) button.
7	8 (18)	04	C0	Press PAUSE (Write) button.
8	0	10	00	
9				Wait for 5 sec.
10	0	FF	3E	
11	B	00	02	
12	C	85		Check the data is "55".
13	B	00	00	
14	0	FF	00	

2-2. S VIDEO OUT Y Level Adjustment (VD-036 board)

Mode	E-E
Signal	No signal
Measurement Point	Y signal terminal of S VIDEO OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	8A (NTSC) 90 (PAL)
Specified value	A = 1000 ± 14 mVp-p

Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform "Preparations".
2				Set the HOLD switch of adjustment remote commander to "OFF" (NORMAL position).
3				Set the 60i/50i SEL (OTHERS menu) to "60i".
4				Set the HOLD switch of adjustment remote commander to "HOLD" (SERVICE position).
5	C	8A		Change the data and set the Y signal level (A) to the NTSC specified value.
6	C	8A		Press PAUSE (Write) button.
7				Set the HOLD switch of adjustment remote commander to "OFF" (NORMAL position).
8				Set the 60i/50i SEL (OTHERS menu) to "50i".
9				Set the HOLD switch of adjustment remote commander to "HOLD" (SERVICE position).
10	C	90		Change the data and set the Y signal level (A) to the PAL specified value.
11	C	90		Press PAUSE (Write) button.
12				Perform "Processing after Complete Adjustment".

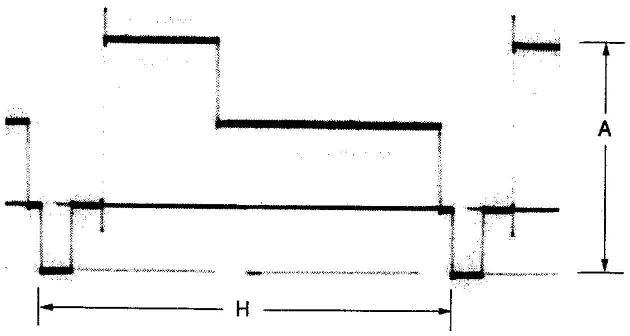


Fig. 6-2-3

2-3. S VIDEO OUT Chroma Level Adjustment (VD-036 board)

Mode	E-E
Signal	No signal
Measurement Point	Chroma signal terminal of S VIDEO OUT jack (75 Ω terminated) External trigger: Y signal terminal of S VIDEO OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	8B, 8C (NTSC) 91, 92 (PAL)
Specified value	Cr level: A = 714 ± 14 mVp-p(NTSC) A = 700 ± 14 mVp-p(PAL) Cb level: B = 714 ± 14 mVp-p(NTSC) B = 700 ± 14 mVp-p(PAL) Burst level: C = 286 ± 6 mVp-p(NTSC) C = 300 ± 6 mVp-p(PAL)

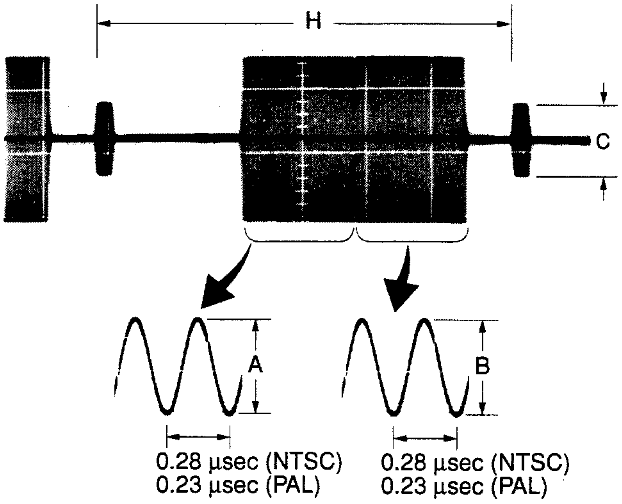


Fig. 6-2-4

Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform "Preparations".
2				Set the HOLD switch of adjustment remote commander to "OFF" (NORMAL position).
3				Set the 60i/50i SEL (OTHERS menu) to "60i".
4				Set the HOLD switch of adjustment remote commander to "HOLD" (SERVICE position).
5	C	8B		Change the data and set the Cr signal level (A) to the NTSC specified value.
6	C	8B		Press PAUSE (Write) button.
7	C	8C		Change the data and set the Cb signal level (B) to the NTSC specified value.
8	C	8C		Press PAUSE (Write) button.
9				Check the burst signal (C) to the NTSC specified value.
10				Set the HOLD switch of adjustment remote commander to "OFF" (NORMAL position).
11				Set the 60i/50i SEL (OTHERS menu) to "50i".
12				Set the HOLD switch of adjustment remote commander to "HOLD" (SERVICE position).
13	C	91		Change the data and set the Cr signal level (A) to the PAL specified value.
14	C	91		Press PAUSE (Write) button.
15	C	92		Change the data and set the Cb signal level (B) to the PAL specified value.
16	C	92		Press PAUSE (Write) button.
17				Check the burst signal (C) to the PAL specified value.
18				Perform "Processing after Complete Adjustment".

2-4. VIDEO OUT Level Check (VD-036 board)

Mode	E-E
Signal	No signal
Measurement Point	VIDEO OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Specified value	Sync level: A = 286 ± 18 mVp-p(NTSC) A = 300 ± 18 mVp-p(PAL) Burst level: B = 286 ± 18 mVp-p(NTSC) B = 300 ± 18 mVp-p(PAL)

Checking method:

Order	Page	Address	Data	Procedure
1				Perform "Preparations".
2				Set the HOLD switch of adjustment remote commander to "OFF" (NORMAL position).
3				Set the 60i/50i SEL (OTHERS menu) to "60i".
4				Check the sync signal level (A) to the NTSC specified value.
5				Check the burst signal level (B) to the NTSC specified value.
6				Set the 60i/50i SEL (OTHERS menu) to "50i".
7				Check the sync signal level (A) to the PAL specified value.
8				Check the burst signal level (B) to the PAL specified value.
9				Set the HOLD switch of adjustment remote commander to "HOLD" (SERVICE position).
10				Perform "Processing after Complete Adjustment".

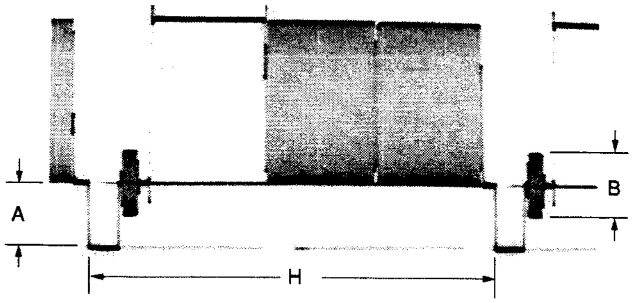


Fig. 6-2-5

2-5. Processing after Complete Adjustment

Perform the setting through the procedure mentioned below when you finish the "S VIDEO, VIDEO OUT Adjustment".

Order	Page	Address	Data	Procedure
1	0	10	01	
2	C (1C)	0F	00	Press PAUSE (Write) button.
3	8 (18)	04	80	Press PAUSE (Write) button.
4	8 (18)	00	00	Press PAUSE (Write) button.
5	8 (18)	01	00	Press PAUSE (Write) button.
6	8 (18)	06	00	Press PAUSE (Write) button.
7	0	10	00	
8	0	01	00	

3. VIDEO OUT Level Check (E-E) (VD-036 board)

Mode	E-E
Signal	Color bar (VIDEO IN jack)
Measurement Point	VIDEO OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Specified value	Sync level: A = 286 ± 18 mVp-p(NTSC) A = 300 ± 18 mVp-p(PAL) Burst level: B = 286 ± 18 mVp-p(NTSC) B = 300 ± 18 mVp-p(PAL)

Switch setting

1) DISPLAY OUTPUT switch .... OFF
2) INPUT SELECT switch .... VIDEO

Checking method:

1) Enter the color bar signal to VIDEO IN jack.
2) Set the 60i/50i SEL (OTHERS menu) to "60i".
3) Check the sync signal level (A) to the NTSC specified value.
4) Check the burst signal level (B) to the NTSC specified value.
5) Set the 60i/50i SEL (OTHERS menu) to "50i".
6) Check the sync signal level (A) to the PAL specified value.
7) Check the burst signal level (B) to the PAL specified value.

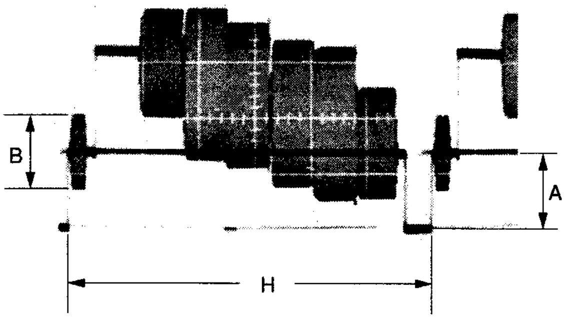


Fig. 6-2-6

4. COMPONENT OUT Adjustment (D1 SMPTE)

4-1. Preparations

Perform the following data setting before the "COMPONENT OUT Adjustment (D1 SMPTE)".

Switch setting

1) DISPLAY OUTPUT switch .... OFF
2) INPUT SELECT switch .... VIDEO (except DV)
3) HDV/DV SEL (IN/OUT REC menu) .... HDV
4) HDMI/CMPNT (IN/OUT REC menu) 480i
5) DOWN CONVERT (IN/OUT REC menu) ... SQUEEZE

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	01	
3	3 (13)	CF		Set the bit value of bit0 is "1", and press PAUSE button. (Note)
4	8 (18)	00		Set the bit value of bit7 is "1", and press PAUSE button. (Note)
5	0	10	00	
6	8	00		Set the bit value of bit1 is "1", and press PAUSE button. (Note)
7				Wait for 5 sec.

Note: For the bit values, refer to "6-3. SERVICE MODE", "3-4. 4. Bit value discrimination".

4-2. COMPONENT OUT Y Level Adjustment (D1 SMPTE) (VD-036 board)

Mode	E-E
Signal	No Signal
Measurement Point	Y terminal of COMPONENT OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	93
Specified value	Y level: A = 1000 ± 10 mVp-p Sync level: B = 300 ± 10 mVp-p

Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform "Preparations".
2	C	93		Change the data and set the Y signal level (A) to the specified value.
3	C	93		Press PAUSE (Write) button.
4				Check the sync signal level (B) to the specified value.
5				Perform "Processing after Complete Adjustment".

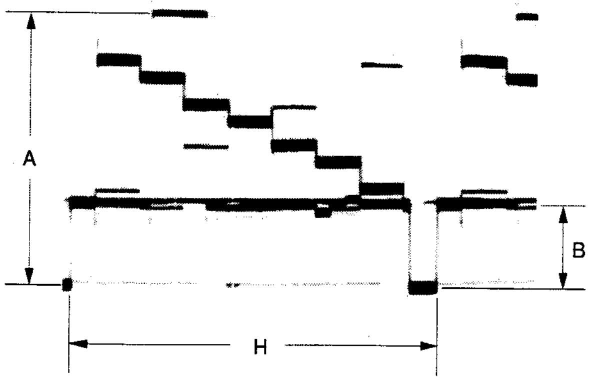


Fig. 6-2-7

4-3. COMPONENT OUT Pb Level Adjustment (D1 SMPTE) (VD-036 board)

Mode	E-E
Signal	No Signal
Measurement Point	Pb/Cb terminal of COMPONENT OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	94
Specified value	Pb level: A = 525 ± 10 mVp-p

Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform "Preparations".
2	C	94		Change the data and set the Pb signal level (A) to the specified value.
3	C	94		Press PAUSE (Write) button.
4				Perform "Processing after Complete Adjustment".

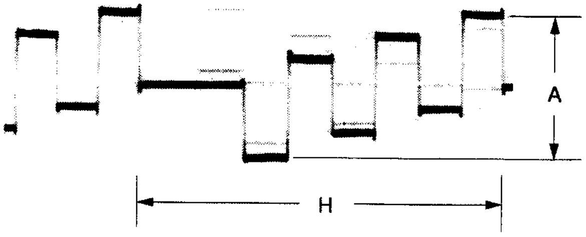


Fig. 6-2-8

4-4. COMPONENT OUT Pr Level Adjustment (D1 SMPTE) (VD-036 board)

Mode	E-E
Signal	No Signal
Measurement Point	Pr/Cr terminal of COMPONENT OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	95
Specified value	Pr level: A = 525 ± 10 mVp-p

Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform "Preparations".
2	C	95		Change the data and set the Pr signal level (A) to the specified value.
3	C	95		Press PAUSE (Write) button.
4				Perform "Processing after Complete Adjustment".

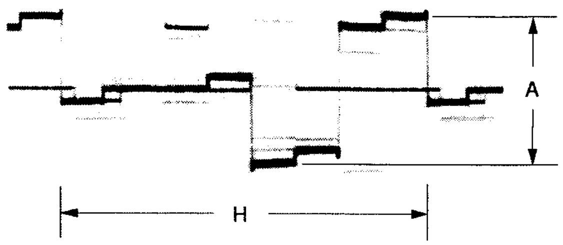


Fig. 6-2-9

4-5. Processing after Complete Adjustment

Perform the setting through the procedure mentioned below when you finish the "COMPONENT OUT Adjustment (D1 SMPTE)".

Order	Page	Address	Data	Procedure
1	8	00		Set the bit value of bit1 is "0", and press PAUSE button. (Note)
2	0	10	01	
3	8 (18)	00		Set the bit value of bit7 is "0", and press PAUSE button. (Note)
4	3 (13)	CF		Set the bit value of bit0 is "0", and press PAUSE button. (Note)
5	0	10	00	
6	0	01	00	

Note: For the bit values, refer to "6-3. SERVICE MODE", "3-4. 4. Bit value discrimination".

5. COMPONENT OUT Adjustment (D1 BETACAM)

5-1. Preparations

Perform the following data setting before the "COMPONENT OUT Adjustment (D1 BETACAM)".

Switch setting

1) DISPLAY OUTPUT switch .... OFF
2) INPUT SELECT switch .... VIDEO (except DV)
3) HDV/DV SEL (IN/OUT REC menu) .... HDV
4) HDMI/CMPNT (IN/OUT REC menu) 480i
5) DOWN CONVERT (IN/OUT REC menu) ... SQUEEZE

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	01	
3	3 (13)	CF		Set the bit value of bit1 is "1", and press PAUSE button. (Note)
4	8 (18)	00		Set the bit value of bit7 is "1", and press PAUSE button. (Note)
5	0	10	00	
6	8	00		Set the bit value of bit1 is "1", and press PAUSE button. (Note)
7				Wait for 5 sec.

Note: For the bit values, refer to "6-3. SERVICE MODE", "3-4. 4. Bit value discrimination".

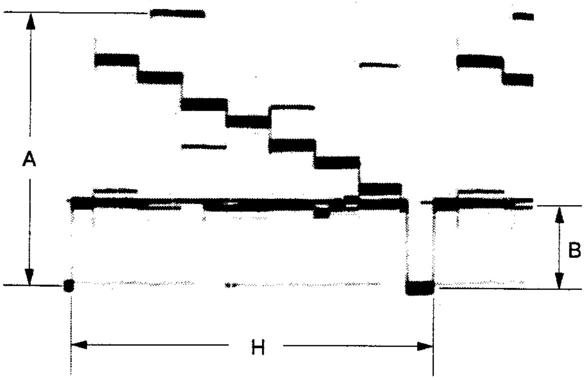


Fig. 6-2-10

5-2. COMPONENT OUT Y Level Adjustment (D1 BETACAM) (VD-036 board)

Mode	E-E
Signal	No Signal
Measurement Point	Y terminal of COMPONENT OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	99
Specified value	Y level: A = 1000 ± 10 mVp-p Sync level: B = 286 ± 10 mVp-p (NTSC) B = 300 ± 10 mVp-p (PAL)

Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform "Preparations".
2				Set the HOLD switch of adjustment remote commander to "OFF" (NORMAL position).
3				Set the 60i/50i SEL (OTHERS menu) to "60i".
4				Set the HOLD switch of adjustment remote commander to "HOLD" (SERVICE position).
5	C	99		Change the data and set the Y signal level (A) to the specified value.
6	C	99		Press PAUSE (Write) button.
7				Check the sync signal level (B) to the NTSC specified value.
8				Set the HOLD switch of adjustment remote commander to "OFF" (NORMAL position).
9				Set the 60i/50i SEL (OTHERS menu) to "50i".
10				Check the Y signal level (A) to the specified value.
11				Check the sync signal level (B) to the PAL specified value.
12				Set the HOLD switch of adjustment remote commander to "HOLD" (SERVICE position).
13				Perform "Processing after Complete Adjustment".

5-3. COMPONENT OUT Pb Level Adjustment (D1 BETACAM) (VD-036 board)

Mode	E-E
Signal	No Signal
Measurement Point	Pb/Cb terminal of COMPONENT OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	9A
Specified value	Pb level: A = 756 ± 10 mVp-p

Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform "Preparations".
2				Set the HOLD switch of adjustment remote commander to "OFF" (NORMAL position).
3				Set the 60i/50i SEL (OTHERS menu) to "60i".
4				Set the HOLD switch of adjustment remote commander to "HOLD" (SERVICE position).
5	C	9A		Change the data and set the Pb signal level (A) to the specified value.
6	C	9A		Press PAUSE (Write) button.
7				Set the HOLD switch of adjustment remote commander to "OFF" (NORMAL position).
8				Set the 60i/50i SEL (OTHERS menu) to "50i".
9				Check the Pb signal level (A) to the specified value.
10				Set the HOLD switch of adjustment remote commander to "HOLD" (SERVICE position).
11				Perform "Processing after Complete Adjustment".

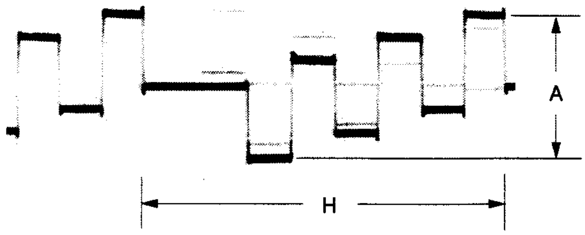


Fig. 6-2-11

5-4. COMPONENT OUT Pr Level Adjustment (D1 BETACAM) (VD-036 board)

Mode	E-E
Signal	No Signal
Measurement Point	Pr/Cr terminal of COMPONENT OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	9B
Specified value	Pr level: A = 756 ± 10 mVp-p

Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform "Preparations".
2				Set the HOLD switch of adjustment remote commander to "OFF" (NORMAL position).
3				Set the 60i/50i SEL (OTHERS menu) to "60i".
4				Set the HOLD switch of adjustment remote commander to "HOLD" (SERVICE position).
5	C	9B		Change the data and set the Pr signal level (A) to the specified value.
6	C	9B		Press PAUSE (Write) button.
7				Set the HOLD switch of adjustment remote commander to "OFF" (NORMAL position).
8				Set the 60i/50i SEL (OTHERS menu) to "50i".
9				Check the Pr signal level (A) to the specified value.
10				Set the HOLD switch of adjustment remote commander to "HOLD" (SERVICE position).
11				Perform "Processing after Complete Adjustment".

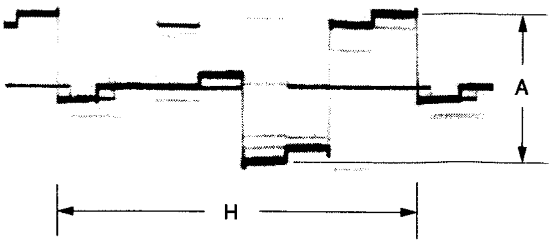


Fig. 6-2-12

5-5. Processing after Complete Adjustment

Perform the setting through the procedure mentioned below when you finish the "COMPONENT OUT Adjustment (D1 BETACAM)".

Order	Page	Address	Data	Procedure
1	8	00		Set the bit value of bit1 is "0", and press PAUSE button. (Note)
2	0	10	01	
3	8 (18)	00		Set the bit value of bit7 is "0", and press PAUSE button. (Note)
4	3 (13)	CF		Set the bit value of bit1 is "0", and press PAUSE button. (Note)
5	0	10	00	
6	0	01	00	

Note: For the bit values, refer to "6-3. SERVICE MODE", "3-4. 4. Bit value discrimination".

2-6. LCD SYSTEM ADJUSTMENTS

Before perform the LCD system adjustments, check that the data of page: 0, address: 10 is "00".
If not, select page: 0, address: 10, and set the data "00".

Note 1: Taken an extreme care not to destroy the liquid crystal display module by static electricity when replacing it.
Note 2: Set the LCD BRIGHT (DISPLAY SET menu) to center. Set the LCD COLOR (DISPLAY SET menu) to center.

1. LCD Automatic Adjustment (PD-287 board)

This adjustment does the following items automatically.
VCO Adjustment
Contrast Adjustment

Mode	E-E
Signal	No signal
Adjustment Page	C
Adjustment Address	45, 46 (VCO Adjustment) 4D, 76 (Contrast Adjustment)

Note 1: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1				Set the HOLD switch of adjustment remote commander to "OFF" (NORMAL position).
2				Set the 60i/50i SEL (OTHERS menu) to "60i".
3				Set the HOLD switch of adjustment remote commander to "HOLD" (SERVICE position).
4	0	01	01	
5	C	42	C8	Press PAUSE (Write) button.
6	3	03	FF	
7	3	01	5A	Press PAUSE (Write) button. (Note 2)
8	3	02		Check the data changes to "00".
9	3	03		Check the data is "00". (Note 4)
10				Set the HOLD switch of adjustment remote commander to "OFF" (NORMAL position).
11				Set the 60i/50i SEL (OTHERS menu) to "50i".
12				Set the HOLD switch of adjustment remote commander to "HOLD" (SERVICE position).
13	C	42	D8	Press PAUSE (Write) button.
14	3	03	FF	
15	3	01	5A	Press PAUSE (Write) button. (Note 3)
16	3	02		Check the data changes to "00".
17	3	03		Check the data is "00". (Note 4)
18	C	4D		Read the data and this data named D_{4D}.
19	C	76	D_{4D}	Press PAUSE (Write) button.
20	C	42	C8	Press PAUSE (Write) button.
21	0	01	00	

Note 2: The adjustment data will be automatically input to page: C, address: 45 and 4D.
Note 3: The adjustment data will be automatically input to page: C, address: 46 and 4D.
Note 4: If the data change to "01", adjustment has error. Contents of error is written into page: 3, address: C6. See the following table.

Data of page: 3, address: C6	Contents of error
58	VCO adjustment error
60	Contrast adjustment error

2. V-COM Adjustment (PD-287 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.

If deviated, the LCD display will be move, producing flicker and conspicuous vertical lines.

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	C
Adjustment Address	47
Specified Value	The brightness difference between the section-A and section-B is minimum

Note 1: Perform "LCD Automatic Adjustment" before this adjustment.

Note 2: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	56	0D	Press PAUSE (Write) button.
3	C	47		Change the data so that brightness of the section A and section B is equal. (The data should be "AB" to "CD")
4	C	47		Press PAUSE (Write) button.
5	C	56	C5	Press PAUSE (Write) button.
6	0	01	00	

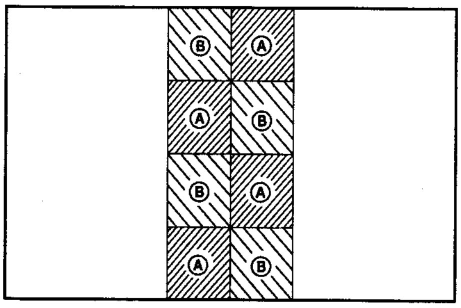


Fig. 6-2-13

3. Transmissive Mode White Balance Adjustment (PD-287 board)

Correct the white balance at transmissive mode.

If deviated, the LCD screen color cannot be reproduced.

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	C
Adjustment Address	4B, 4C
Specified Value	LCD screen must not be colored

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: Check the white balance only when replacing the following parts. If necessary, adjust them.

1. LCD block
2. Light induction plate
3. IC6102

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	C	4B	8C	Press PAUSE (Write) button.
3	C	4C	77	Press PAUSE (Write) button.
4				Check that the LCD screen is not colored. If not colored, proceed to step 6.
5	C	4B 4C		Change the data so that the LCD screen is not colored. (Note 3)
6	0	01	00	

Note 3: To write in the non-volatile memory (EEPROM), press the PAUSE (Write) button each time to set the data.

4. Sample Hold Phase Adjustment (PD-287 board)

Set the sampling hold timing of the LCD panel to optimum timing.

Mode	VTR stop (PLAY/EDIT mode)
Signal	No signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	C
Adjustment Address	54
Specified Value	The LCD screen is brightest

Note 1: Perform "LCD Automatic Adjustment" and "V-COM Adjustment" before this adjustment.

Note 2: Check that the data of page: 0, address: 10 is "00".

Switch setting

HDV/DV SEL (IN/OUT REC menu) .... HDV

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	0C	20	Press PAUSE (Write) button.
3	3	22	0F	Press PAUSE (Write) button.
4	C	55	01	Press PAUSE (Write) button.
5	C	54		Set the following data, one by one, and investigate which data makes the LCD screen the brightest. 1F, 3F, 5F, 7F, 9F, BF
6	C	54		Set the data which made the LCD screen the brightest. This data named D_{adj}.
7	C	54		Press PAUSE (Write) button.
8	C	55	03	Press PAUSE (Write) button.
9	C	54		Set the data which subtracted 20 from D_{adj}. (hexadecimal calculation) (Note 3)
10				Check that the 2nd position A of the LCD screen is the brightest. (Fig. 6-2-14)
11	C	54	D_{adj}	Press PAUSE (Write) button.
12	3	0C	00	Press PAUSE (Write) button.
13	3	22	00	Press PAUSE (Write) button.
14	C	55	CC	Press PAUSE (Write) button.
15	0	01	00	

Note 3: For example.
When D_{adj} is "BF", data is "9F".
When D_{adj} is "5F", data is "3F".
However, when D_{adj} is "1F", data is "BF".

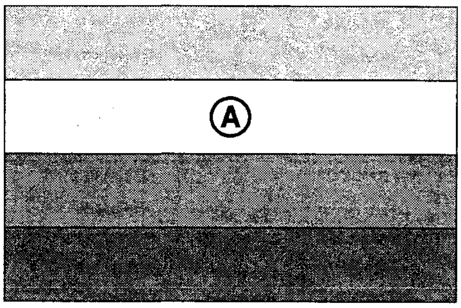


Fig. 6-2-14

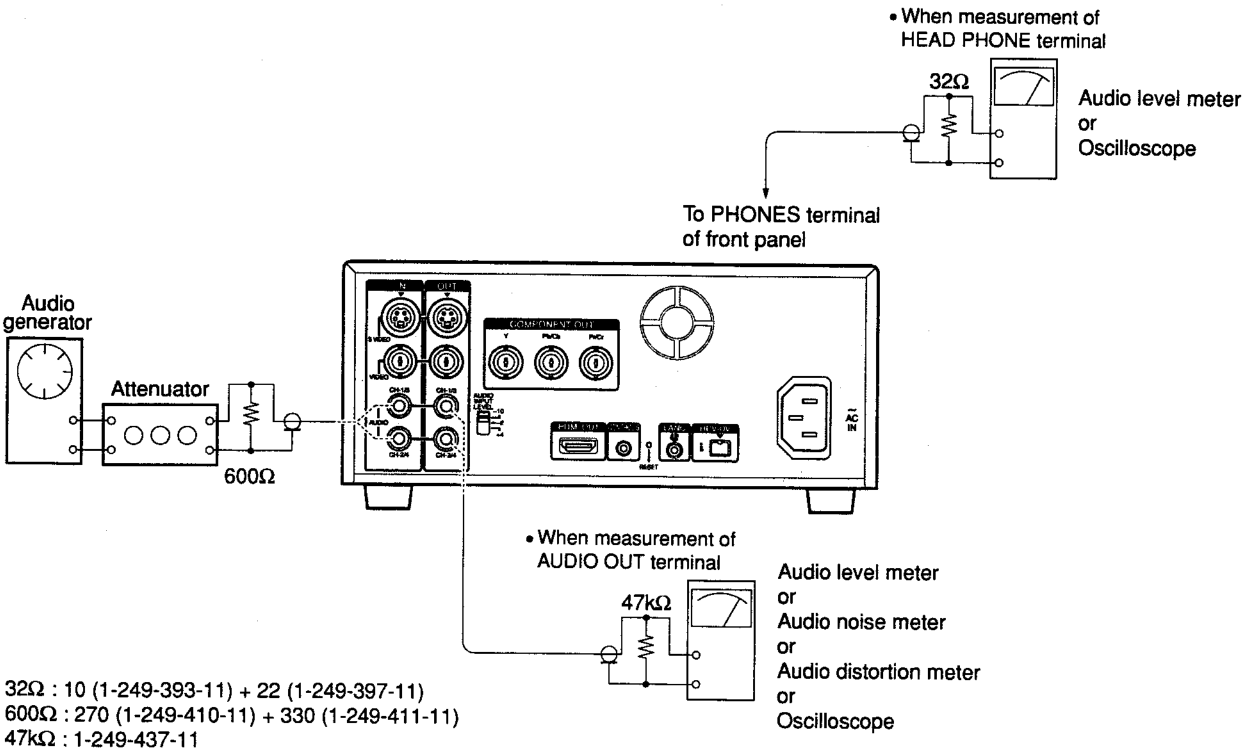
2-7. AUDIO SYSTEM ADJUSTMENTS

Set the switches and menu to the following position unless otherwise specified.

Switch setting

1) AUDIO INPUT switch (AUTO/MANU) (Front panel) .... MANU
2) AUDIO REC LEVEL control knob (Front panel) .... CENTER
3) AUDIO OUTPUT SELECT switch (Front panel) CH1/2
4) STATUS CHECK button (Front panel) .... Audio Level meter
5) INPUT SELECT switch (Front panel) ....VIDEO (except HDV/DV)
6) AUDIO INPUT LEVEL switch (Rear panel) .... –10
7) AUDIO MODE (AUDIO SET menu) FS48K

Connection of equipment


• When measurement of HEAD PHONE terminal
32Ω
Audio level meter
or
Oscilloscope
To PHONES terminal of front panel
Audio generator
Attenuator
600Ω
• When measurement of AUDIO OUT terminal
47kΩ
Audio level meter
or
Audio noise meter
or
Audio distortion meter
or
Oscilloscope

32Ω : 10 (1-249-393-11) + 22 (1-249-397-11)
600Ω : 270 (1-249-410-11) + 330 (1-249-411-11)
47kΩ : 1-249-437-11

Fig. 6-2-15

1. Playing Level Check

Mode	PLAY
Signal	Alignment tape: For audio check (NTSC: XH5-3/PAL: XH5-3P)
Measurement Point	AUDIO OUT terminal (CH-1, 2)
Measuring instrument	Audio level meter Oscilloscope
Specified Value	32 kHz mode section: 1 kHz signal must be outputted. 48 kHz mode section: 1 kHz signal level is +8 to +12 dBs (NTSC) +6 to +10 dBs (PAL) 44.1 kHz mode EMP ON section: 7.35 kHz signal level is +2 to +6 dBs (NTSC) 0 to +4 dBs (PAL) 44.1 kHz mode EMP OFF section: 7.35 kHz signal level is +8 to +12 dBs (NTSC) +6 to +10 dBs (PAL)

Note: Check that the data of page: 0, address: 10 is "00".

Checking method:

1) Check that the play signal level satisfies the specified value.
2) Check with the oscilloscope that no clip is found in the output waveform.

2. Audio Test Signal Level Check

Mode	E-E
Signal	Audio test signal
Measurement Point	AUDIO OUT terminal (CH-1, 2)
Measuring instrument	Audio level meter Oscilloscope
Specified Value	–11 to –8.5 dBs

Note 1: 0 dBs = 0.775 Vrms

Switch setting

1) COLOR BAR (IN/OUT REC menu) .... ON [TONE]

Checking method:

1) Set the 60i/50i SEL (OTHERS menu) to "60i".
2) Check that the output of AUDIO OUT terminal (CH-1, 2) satisfies the specified value.
3) Check with the oscilloscope that no clip is found in the output waveform.
4) Set the 60i/50i SEL (OTHERS menu) to "50i".
5) Check that the output of AUDIO OUT terminal (CH-1, 2) satisfies the specified value.
6) Check with the oscilloscope that no clip is found in the output waveform.
7) Set the 60i/50i SEL (OTHERS menu) to "50i" or "60i".

   Note 2: 60i: HVR-M25J/M25U/M25N
   50i: HVR-M25E/M25P/M25C

3. E-E Level Check

(1) –10dB Check

Mode	E-E
Signal	Audio: 1 kHz, –2 dBs signal (NTSC) 1 kHz, –4 dBs signal (PAL) AUDIO IN terminal (CH-1, 2)
Measurement Point	AUDIO OUT terminal (CH-1, 2)
Measuring instrument	Audio level meter Oscilloscope
Specified Value	At max. REC LEVEL: +8 to +12 dBs (NTSC) +6 to +10 dBs (PAL) At min. REC LEVEL: No signal is present. At –12 dB REC LEVEL: –4 to 0 dBs (NTSC) –6 to –2 dBs (PAL) Control knob position: ±30 deg. of center

Note 1: 0 dBs = 0.775 Vrms

Switch setting

1) AUDIO MODE (AUDIO SET menu) FS48K
2) STATUS CHECK button .... Audio Level meter
3) AUDIO INPUT LEVEL switch .... –10

Checking method:

1) Enter 1 kHz, –2 dBs (NTSC) or –4 dBs (PAL) signal to the AUDIO IN terminal (CH-1).
2) Check that the output of AUDIO OUT terminal (CH-1) satisfies the specified value, when the AUDIO REC LEVEL control knob (CH-1) on the front panel is in the maximum position.
3) Check with the oscilloscope that no clip is found in the output waveform.
4) Check that the output of AUDIO OUT terminal (CH-1) satisfies the specified value, when the AUDIO REC LEVEL control knob (CH-1) is in the minimum position.
5) Press the "STATUS CHECK" button on the front panel to display the audio level meter on LCD monitor.
6) Adjust the AUDIO REC LEVEL control knob (CH-1) so that the audio level meter on CH-1 displays "–12".
   Note 2: Unless otherwise specified, do not rotate the AUDIO REC LEVEL control knob, as other checking items use this setting (rotation angle) of the AUDIO REC LEVEL control knob.
7) Check at this time that the control knob position and AUDIO OUT terminal (CH-1) output satisfy the specified values.
8) Check with the oscilloscope that no clip is found in the output waveform.
9) For the CH-2, make a checking in the same manner.

(2) –2dB Check

Mode	E-E
Signal	Audio: 1 kHz, +6 dBs signal (NTSC) 1 kHz, +4 dBs signal (PAL) AUDIO IN terminal (CH-1, 2)
Measurement Point	AUDIO OUT terminal (CH-1, 2)
Measuring instrument	Audio level meter Oscilloscope
Specified Value	–4 to 0 dBs (NTSC) –6 to –2 dBs (PAL)

Note: 0 dBs = 0.775 Vrms

Switch setting

1) AUDIO MODE (AUDIO SET menu) FS48K
2) AUDIO INPUT LEVEL switch .... –2
3) AUDIO REC LEVEL control knob
   .... The position at –10 dB Check of E-E Level Check

Checking method:

1) Enter 1 kHz, +6 dBs (NTSC) or +4 dBs (PAL) signal to the AUDIO IN terminal (CH-1).
2) Check that the output of AUDIO OUT terminal (CH-1) satisfies the specified value.
3) Check with the oscilloscope that no clip is found in the output waveform.
4) For the CH-2, make a checking in the same manner.

(3) +4dB Check

Mode	E-E
Signal	Audio: 1 kHz, +12 dBs signal (NTSC) 1 kHz, +10 dBs signal (PAL) AUDIO IN terminal (CH-1, 2)
Measurement Point	AUDIO OUT terminal (CH-1, 2)
Measuring instrument	Audio level meter Oscilloscope
Specified Value	–4 to 0 dBs (NTSC) –6 to –2 dBs (PAL)

Note : 0 dBs = 0.775 Vrms

Switch setting

1) AUDIO MODE (AUDIO SET menu) FS48K
2) AUDIO INPUT LEVEL switch .... +4
3) AUDIO REC LEVEL control knob
   .... The position at –10 dB Check of E-E Level Check

Checking method:

1) Enter 1 kHz, +12 dBs (NTSC) or +10 dBs (PAL) signal to the AUDIO IN terminal (CH-1).
2) Check that the output of AUDIO OUT terminal (CH-1) satisfies the specified value.
3) Check with the oscilloscope that no clip is found in the output waveform.
4) For the CH-2, make a checking in the same manner.

4. Frequency Characteristic Check

(1) 4CH mode Check

Mode	E-E
Signal	Audio: 1 kHz, –4 dBs signal 20 Hz, –4 dBs signal 14 kHz, –4 dBs signal AUDIO IN terminal (CH-1, 2)
Measurement Point	AUDIO OUT terminal (CH-1, 2)
Measuring instrument	Audio level meter Oscilloscope
Specified Value	Difference in output level: A = –2 to 0 dB B = –1.5 to +1.5 dB

Note: 0 dBs = 0.775 Vrms

Switch setting

1) AUDIO MODE (AUDIO SET menu) FS32K
2) AUDIO INPUT LEVEL switch .... –10
3) AUDIO REC LEVEL control knob
   .... The position at –10 dB Check of E-E Level Check

Checking method:

1) Enter 1 kHz, –4 dBs signal to the AUDIO IN terminal (CH-1).
2) Measure the output of AUDIO OUT terminal (CH-1) at this time, and assume it to be "a" (dBs).
3) Enter 20 Hz, –4 dBs signal to the AUDIO IN terminal (CH-1).
4) Measure the output of AUDIO OUT terminal (CH-1) at this time, and assume it to be "b" (dBs).
5) Check with the oscilloscope that no clip is found in the output waveform.
6) Enter 14 kHz, –4 dBs signal to the AUDIO IN terminal (CH-1).
7) Measure the output of AUDIO OUT terminal (CH-1) at this time, and assume it to be "c" (dBs).
8) Check with the oscilloscope that no clip is found in the output waveform.
9) Calculate the difference A (dB) between output levels "b" (dBs) and "a" (dBs) to check that it satisfies the specified value.
   A (dB) = b (dBs) – a (dBs)
10) Calculate the difference B (dB) between output levels "c" (dBs) and "a" (dBs) to check that it satisfies the specified value.
   B (dB) = c (dBs) – a (dBs)
11) For the CH-2, make a checking in the same manner.

(2) 2CH mode Check

Mode	E-E
Signal	Audio: 1 kHz, –4 dBs signal 20 kHz, –4 dBs signal AUDIO IN terminal (CH-1, 2)
Measurement Point	AUDIO OUT terminal (CH-1, 2)
Measuring instrument	Audio level meter Oscilloscope
Specified Value	Difference in output level: A = –1.5 dB to +1.5 dB

Note: 0 dBs = 0.775 Vrms

Switch setting

1) AUDIO MODE (AUDIO SET menu) FS48K
2) AUDIO INPUT LEVEL switch .... –10
3) AUDIO REC LEVEL control knob
   .... The position at –10 dB Check of E-E Level Check

Checking method:

1) Enter 1 kHz, –4 dBs signal to the AUDIO IN terminal (CH-1).
2) Measure the output of AUDIO OUT terminal (CH-1) at this time, and assume it to be "a" (dBs).
3) Enter 20 kHz, –4 dBs signal to the AUDIO IN terminal (CH-1).
4) Measure the output of AUDIO OUT terminal (CH-1) at this time, and assume it to be "b" (dBs).
5) Check with the oscilloscope that no clip is found in the output waveform.
6) Calculate the difference A (dB) between output levels "b" (dBs) and "a" (dBs) to check that it satisfies the specified value.
   A (dB) = b (dBs) – a (dBs)
7) For the CH-2, make a checking in the same manner.

5. E-E Noise Level Check

Mode	E-E
Signal	Audio: No signal Nothing is connected to the AUDIO IN terminal (CH-1, 2)
Measurement Point	AUDIO OUT terminal (CH-1, 2)
Measuring instrument	Audio noise meter (A-weight filter ON)
Specified Value	–80 dBs or less

Note: 0 dBs = 0.775 Vrms

Switch setting
1) AUDIO MODE (AUDIO SET menu) FS48K
2) AUDIO INPUT LEVEL switch .... –10
3) AUDIO REC LEVEL control knob
   .... The position at –10 dB Check of E-E Level Check

Checking method:
1) Connect the audio noise meter to the AUDIO OUT terminal (CH-1), and turn on the A-weight filter.
2) Measure the noise level at this time to check that it satisfies the specified value.
3) For the CH-2, make a checking in the same manner.

6. Distortion Check

Mode	E-E
Signal	Audio: 1 kHz, +8 dBs signal (NTSC) 1 kHz, +6 dBs signal (PAL) AUDIO IN terminal (CH-1, 2)
Measurement Point	AUDIO OUT terminal (CH-1, 2)
Measuring instrument	Audio distortion meter
Specified Value	–80 dB or less (THD)

Note: 0 dBs = 0.775 Vrms

Switch setting
1) AUDIO MODE (AUDIO SET menu) FS48K
2) AUDIO INPUT LEVEL switch .... –10
3) AUDIO REC LEVEL control knob
   .... The position at –10 dB Check of E-E Level Check

Checking method:
1) Enter 1 kHz, +8 dBs (NTSC) or +6 dBs (PAL) signal to the AUDIO IN terminal (CH-1).
2) Measure the distortion of the AUDIO OUT terminal (CH-1) at this time to check that it satisfies the specified value.
3) For the CH-2, make a checking in the same manner.

7. HEAD PHONE Check

Mode	E-E
Signal	Audio: 1 kHz, –6 dBs signal AUDIO IN terminal (CH-1, 2)
Measurement Point	PHONES terminal (L, R)
Measuring instrument	Audio level meter Oscilloscope
Specified Value	–14 to –10 dBs

Note: 0 dBs = 0.775 Vrms

Switch setting

1) AUDIO MODE (AUDIO SET menu) FS32K
2) AUDIO INPUT LEVEL switch .... –10
3) AUDIO REC LEVEL control knob
   .... The position at –10 dB Check of E-E Level Check

Checking method:

1) Enter 1 kHz, –6 dBs signal to the AUDIO IN terminal (CH-1).
2) Set the PHONE LEVEL control knob to the maximum.
3) Measure the output of PHONES terminal (L) at this time to check that it satisfies the specified value.
4) Check with the oscilloscope that no clip is found in the output waveform.
5) Connect a headphone to the PHONES terminal, and rotate the PHONE LEVEL control knob from maximum to minimum.
6) Check at this time that the sound on L channel varies smoothly.
7) For the R channel, make a checking in the same manner.

8. E-E Maximum Input Check

(1) –10dB Check

Mode	E-E
Signal	Audio: 1 kHz, +18 dBs signal AUDIO IN terminal (CH-1, 2)
Measurement Point	AUDIO OUT terminal (CH-1, 2)
Measuring instrument	Oscilloscope
Specified Value	No clip is found in the output waveform.

Note: 0 dBs = 0.775 Vrms

Switch setting

1) AUDIO MODE (AUDIO SET menu) FS32K
2) AUDIO INPUT LEVEL switch .... –10

Checking method:

1) Enter 1 kHz, +18 dBs signal to the AUDIO IN terminal (CH-1).
2) Using an oscilloscope, measure the output waveform at the AUDIO OUT terminal (CH-1), when the AUDIO REC LEVEL control knob on the front panel is rotated toward rather throttle side.
3) Check at this time that no clip is found in the output waveform.
4) For the CH-2, make a checking in the same manner.

(2) +4dB Check

Mode	E-E
Signal	Audio: 1 kHz, +30 dBs signal AUDIO IN terminal (CH-1, 2)
Measurement Point	AUDIO OUT terminal (CH-1, 2)
Measuring instrument	Oscilloscope
Specified Value	No clip is found in the output waveform.

Note: 0 dBs = 0.775 Vrms

Switch setting

1) AUDIO MODE (AUDIO SET menu) FS32K
2) AUDIO INPUT LEVEL switch .... +4

Checking method:

1) Enter 1 kHz, +30 dBs signal to the AUDIO IN terminal (CH-1).
2) Using an oscilloscope, measure the output waveform at the AUDIO OUT terminal (CH-1), when the AUDIO REC LEVEL control knob on the front panel is rotated toward rather throttle side.
3) Check at this time that no clip is found in the output waveform.
4) For the CH-2, make a checking in the same manner.

9. E-E AUTO Check

Mode	E-E
Signal	Audio: 1 kHz, –4 dBs signal AUDIO IN terminal (CH-1, 2)
Measurement Point	AUDIO OUT terminal (CH-1, 2)
Measuring instrument	Audio level meter
Specified Value	–8 to –4 dBs (NTSC) –10 to –6 dBs (PAL)

Note: 0 dBs = 0.775 Vrms

Switch setting

1) AUDIO MODE (AUDIO SET menu) FS32K
2) AUDIO INPUT switch (AUTO/MANU) .... AUTO
3) AUDIO INPUT LEVEL switch .... –10

Checking method:

1) Enter 1 kHz, –4 dBs signal to the AUDIO IN terminal (CH-1, 2).
2) Check that the output of AUDIO OUT terminal (CH-1, 2) satisfies the specified value.

10. E-E AUTO Maximum Input Check

Mode	E-E
Signal	Audio: 1 kHz, +18 dBs signal (NTSC) AUDIO IN terminal (CH-1, 2)
Measurement Point	AUDIO OUT terminal (CH-1, 2)
Measuring instrument	Oscilloscope
Specified Value	No clip is found in the output waveform.

Note: 0 dBs = 0.775 Vrms

Switch setting

1) AUDIO MODE (AUDIO SET menu) FS32K
2) AUDIO INPUT switch (AUTO/MANU) .... AUTO
3) AUDIO INPUT LEVEL switch .... –10

Checking method:

1) Enter 1 kHz, +18 dBs signal to the AUDIO IN terminal (CH-1).
2) Measure the output of AUDIO OUT terminal (CH-1), and check that no clip is found in the output waveform
3) For the CH-2, make a checking in the same manner.

6-3. SERVICE MODE

3-1. ADJUSTMENT REMOTE COMMANDER (RM-95)

The adjustment remote commander (RM-95) is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander (RM-95) performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the Adjustment Remote Commander (RM-95)

1) Connect the adjustment remote commander to the LANC terminal.
2) Set the HOLD switch of the adjustment remote commander (RM-95) to "HOLD" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander (RM-95) will display as shown in Fig. 6-3-1.

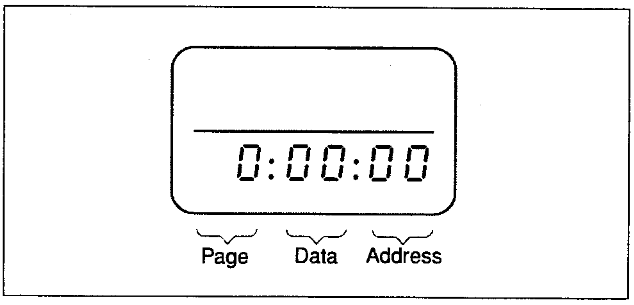


Fig. 6-3-1

3) Operate the adjustment remote commander (RM-95) as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

   - Changing the address
     The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed. There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data in the nonvolatile memory. (The new adjusting data will not be recorded in the nonvolatile memory if this step is not performed)
4) After completing all adjustments, turn off the main power supply once.

2. Precautions Upon Using the Adjustment Remote Commander (RM-95)

Mishandling of the adjustment remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

3-2. ADJUSTMENT REMOTE COMMANDER (NEW LANC JIG)

The adjustment remote commander (New LANC Jig) is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander (New LANC Jig) performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the Adjustment Remote Commander (New LANC Jig))

1) Connect the adjustment remote commander (New LANC Jig) to the LANC terminal via the LANC cable (J-6082-442-A).
2) Set the slide switch of the adjustment remote commander (New LANC Jig) to "SERVICE" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander (New LANC Jig) will display as shown in Fig. 6-3-2.

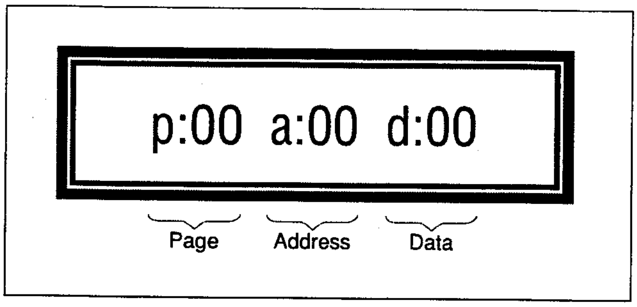


Fig. 6-3-2

3) Operate the adjustment remote commander (New LANC Jig) as follows.
   - Changing the page
     The page increases when the Page+ (▶▶) button is pressed, and decreases when the Page– (◀◀) button is pressed.
   - Changing the address
     The address increases when the ADD+ (▶) button is pressed, and decreases when the ADD– (❚❚) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the Data+ button is pressed, and decreases when the Data– button is pressed. There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The Write (■) button must be pressed to write the adjustment data in the nonvolatile memory. (The new adjusting data will not be recorded in the nonvolatile memory if this step is not performed)
4) After completing all adjustments, turn off the main power supply once.

2. Precautions Upon Using the Adjustment Remote Commander (New LANC Jig)

Mishandling of the adjustment remote commander (New LANC Jig) may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

3-3. DATA PROCESS

The calculation of the DDS display and the adjustment remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Indicates the hexadecimal-decimal conversion table.

Hexadecimal-decimal Conversion Table

Lower digit of hexadecimal / Upper digit of hexadecimal	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	77	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: The characters shown in the parenthesis ( ) shown the display on the adjustment remote commander.

(Example) If the DDS display or the adjustment remote commander shows BD (bd);
Because the upper digit of the adjustment number is B (b), and the lower digit is D (d), the meeting point "189" of ① and ② in the above table is the corresponding decimal number.

Table 6-3-1

3-4. SERVICE MODE

1. Emergence Memory Address (Mechanism section)

Page C	Address F4 to FF

Address	Contents
F4	EMG code when first error occurs
F6	Upper: MSW code when shift starts when first error occurs Lower: MSW code when first error occurs
F7	Lower: MSW code to be moved when first error occurs
F8	EMG code when second error occurs
FA	Upper: MSW code when shift starts when second error occurs Lower: MSW code when second error occurs
FB	Lower: MSW code to be moved when second error occurs
FC	EMG code when last error occurs
FE	Upper: MSW code when shift starts when last error occurs Lower: MSW code when last error occurs
FF	Lower: MSW code to be moved when last error occurs

When no error occurs in this unit, data "00" is written in the above addresses (F4 to FF). when first error occurs in the unit, the data corresponding to the error is written in the first emergency address (F4 to F7). In the same way, when the second error occurs, the data corresponding to the error is written in the second emergency address (F8 to FB).
Finally, when the last error occurs, the data corresponding to the error is written in the last emergency address (FC to FF).

Note: After completing adjustments, be sure to initialize the data of addresses F4 to FF to "00".

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	01	37	Press PAUSE (Write) button.
3	3	02		Check the data changes to "00".
4	0	01	00	

2. EMG Code (Emergency Code)

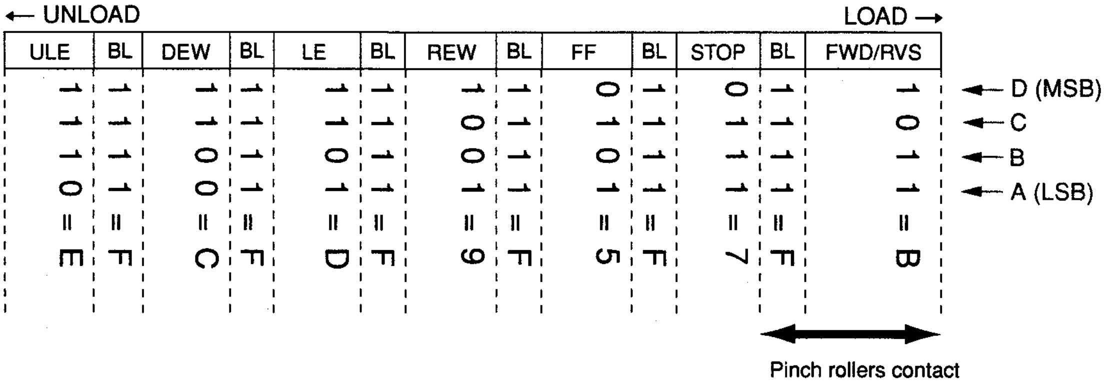
Codes corresponding to the errors which occur are written in C page, addresses F4, F8 and FC . The type of error indicated by the code are shown in the following table.

Code	Error Type
00	No error (Initial state)
10	Loading motor time-out during LOAD
11	Loading motor time-out during UNLOAD
20	Error during tape take up
22	T reel error
23	S reel error
25	Reel motor error
30	Error during normal capstan rotation
40	FG error during drum start-up
42	FG error during normal drum rotation
50	DEW detection
52	Wet DEW detection
70	Cassette compartment LOAD error
71	Cassette compartment UNLOAD error
72	Retry error because something is caught

3. MSW Code

MSW when an alarm occurred:	MSW (Mode Switch) information when an alarm occurred.
MSW when a transition starts:	MSW information when the mechanism position starts to move (if L motor runs).
MSW of target destination:	MSW information of target position if the mechanism position moves.

Mechanism position

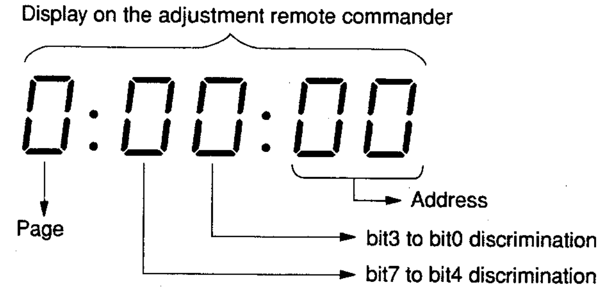


ULE	BL	DEW	BL	LE	BL	REW	BL	FF	BL	STOP	BL	FWD/RVS	
1	1	1	1	1	1	1	1	0	1	0	1	1	← D (MSB)
1	1	1	1	1	1	0	1	1	1	1	1	0	← C
1	1	0	1	0	1	0	1	0	1	1	1	1	← B
0	1	0	1	1	1	1	1	1	1	1	1	1	← A (LSB)
= E	= F	= C	= F	= D	= F	= 9	= F	= 5	= F	= 7	= F	= B	

Mechanism position	MSW code	Description
ULE	E	Unload end position. The mechanism stops at this position when it ejects a cassette. It waits for cassette insertion. The guide starts to expand as it advances to the load position.
BL	F	Blank code. It is provided between code and code. The mechanism does not stop at this code (excluding Load/Unload).
DEW	C	Code during loading.
LE	D	Load end position of tape guide.
REW	9	Position of REW operation. The pinch rollers are released.
FF	5	Position of FF operation. The pinch rollers are released.
STOP	7	Stop position. The pinch rollers are released, the tension regulator returns, and the brake is applied to both reels.
FWD/RVS	B	PB, REC, CUE, REVIEW, and PAUSE positions. The mechanism operates at this position in the mode where normal screen appears with the pinch rollers in contact state and the tension regulator turned on.
NULL	0	Code not existing in MD. Default value.

4. Bit Value Discrimination

Bit values must be discriminated using the display data of the adjustment remote commander for the following items. Us the table below to discriminate if the bit value is “1” or “0”.


Display on the adjustment remote commander
0:00:00
Address
Page
bit3 to bit0 discrimination
bit7 to bit4 discrimination

(Example) If the remote commander display is “8E”, bit value from bit 7 to bit 4 can be discriminated from the column Ⓐ, and those from bit 3 to bit 0 from column Ⓑ.

	Display on the adjustment remote commander	Bit values			
		bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ	8	1	0	0	0
	9	1	0	0	1
	A (A)	1	0	1	0
	B (b)	1	0	1	1
	C (C)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ	E (E)	1	1	1	0
	F (F)	1	1	1	1

5. LED Check

Page 7	Address 00, 01, 02 and 04

Note: Check that the data of page: 0, address: 10 is “00”.

Checking method:

Order	Page	Address	Data	Procedure
1	7	01	90	
2	7	02	FF	
3	7	04	01	
4	7	00	01	Press PAUSE (Write) button.
5	7	02		Check the data changes to “01”.
6				Check that all LEDs light up in the following colors respectively.

LED	Color
PLAY, ON/STANDBY	Green
REC	Red
CASSETTE, HDV, DVCAM, 60, 50, DV i.LINK, HDV i.LINK, DVCAM i.LINK, REW, FF, PAUSE, AUDIO DUB (A3), DUPLICATE PLUS	Orange

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	7	01	90	
2	7	02	FF	
3	7	04	00	
4	7	00	01	Press PAUSE (Write) button.
5	7	02		Check the data changes to “01”.
6	7	01	00	
7	7	02	00	

6. Switch Check

Page 7	Address 65 to 6A, 63, 64

Note: Check that the data of page: 0, address: 10 is “00”.

Using method:

1) Select page: 7, address: 65 to 6A, 63, 64.
2) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00	1B	36	53	77	A0	CF	FF
	00 to 0C	0D to 27	32 to 3A	4F to 58	73 to 7B	8B to B7	B8 to E6	E7 to FF
65 (KEY AD0) (IC4003 (139))	STOP (FR-253 board) (S120)	FF (FR-253 board) (S115)	REC (FR-253 board) (S112)	AUDIO DUB (A3) (FR-253 board) (S110)	DUPLICATE PLUS (FR-253 board) (S108)	–	AUDIO INPUT AUTO (FR-253 board) (S104)	AUDIO INPUT MANUAL (FR-253 board) (S104)
66 (KEY AD1) (IC4003 (140))	PAUSE (FR-253 board) (S121)	REW (FR-253 board) (S116)	–	–	–	–	–	No key input
67 (KEY AD02) (IC4003 (141))	PLAY (FR-253 board) (S122)	EXEC (FR-253 board) (S117)	UP (FR-253 board) (S113)	DOWN (FR-253 board) (S111)	RIGHT (FR-253 board) (S109)	LEFT (FR-253 board) (S107)	–	No key input
68 (KEY AD3) (IC4003 (142))	MENU (FR-253 board) (S124)	STATUS CHECK (FR-253 board) (S118)	–	–	–	–	–	No key input
69 (KEY AD4) (IC4003 (143))	COUNTER RESET (A2) (FR-253 board) (S125)	COUNTER SELECT (FR-253 board) (S119)	DISPLAY (FR-253 board) (S114)	–	–	DISPLAY OUTPUT OFF (FR-253 board) (S105)	DISPLAY OUTPUT ALL (FR-253 board) (S105)	DISPLAY OUTPUT S VIDEO/VIDEO (FR-253 board) (S105)
6A (KEY AD5) (IC4003 (144))	INDEX (A1) (FR-253 board) (S126)	–	–	–	–	INPUT SELECT HDV/DV (FR-253 board) (S101)	INPUT SELECT VIDEO (FR-253 board) (S101)	INPUT SELECT S VIDEO (FR-253 board) (S101)
63 (KEY AD7) (IC4003 (137))	–	–	–	–	–	AUDIO OUTPUT SELECT CH-1/2 (FR-253 board) (S102)	AUDIO OUTPUT SELECT CH-3/4 (FR-253 board) (S102)	AUDIO OUTPUT SELECT MIX (FR-253 board) (S102)
64 (KEY AD8) (IC4003 (138))	–	–	–	–	–	TIMER REPEAT (FR-253 board) (S103)	TIMER REC (FR-253 board) (S103)	TIMER OFF (FR-253 board) (S103)

7. Record of Use Check

Page 7	Address 90 to 95, A4 to AF, C8 to CD

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (VD-036 board BT1001) is removed.
Note 2: When the drum was replaced, initialize the drum rotation counted time.
Note 3: Check that the data of page: 0, address: 10 is "00".

Address	Function		Remarks
90	Eject count with tape	Count (H)	100000th place digit and 10000th place digit of Eject count (decimal digit)
91		Count (M)	1000th place digit and 100th place digit of Eject count (decimal digit)
92	(BCD code)	Count (L)	10th place digit and 1st place digit of Eject count (decimal digit)
93	Eject count without	Count (H)	100000th place digit and 10000th place digit of Eject count (decimal digit)
94	tape	Count (M)	1000th place digit and 100th place digit of Eject count (decimal digit)
95	(BCD code)	Count (L)	10th place digit and 1st place digit of Eject count (decimal digit)
A4	Power supplying	Hour (H)	100000th place digit and 10000th place digit of counted time (decimal digit)
A5	time	Hour (M)	1000th place digit and 100th place digit of counted time (decimal digit)
A6		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
A7	(BCD code)	Minute	
A8	Drum rotation	Hour (H)	100000th place digit and 10000th place digit of counted time (decimal digit)
A9	counted time	Hour (M)	1000th place digit and 100th place digit of counted time (decimal digit)
AA		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
AB	(BCD code)	Minute	
AC	Tape run time	Hour (H)	100000th place digit and 10000th place digit of counted time (decimal digit)
AD		Hour (M)	1000th place digit and 100th place digit of counted time (decimal digit)
AE		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
AF	(BCD code)	Minute	
C8	User initial power	Year	After setting the clock, set the date of power on next
C9	on date	Month	
CA	(BCD code)	Day	
CB	Final condensation	Year	
CC	occurrence date	Month	
CD	(BCD code)	Day	

Using method:

1) The record of use data is displayed at page: 7, addresses: 90 to 95, A4 to AF, C8 to CD.

Initializing method:

Order	Page	Address	Data	Procedure
1	7	01	7F	
2	7	02	FF	
3	7	00	01	Press PAUSE (Write) button.
4	7	02		Check the data changes to "01".
5	7	01	00	
6	7	02	00	

8. Record of Self-diagnosis Check

Page 7	Address B0 to C6

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (VD-036 board BT1001) is removed.
Note 2: Check that the data of page: 0, address 10 is "00".

Address	Self-diagnosis code
B0	"Repaired by" code (Occurred 1st time) *1
B1	"Block function" code (Occurred 1st time)
B2	"Detailed" code (Occurred 1st time)
B4	"Repaired by" code (Occurred 2nd time) *1
B5	"Block function" code (Occurred 2nd time)
B6	"Detailed" code (Occurred 2nd time)
B8	"Repaired by" code (Occurred 3rd time) *1
B9	"Block function" code (Occurred 3rd time)
BA	"Detailed" code (Occurred 3rd time)
BC	"Repaired by" code (Occurred 4th time) *1
BD	"Block function" code (Occurred 4th time)
BE	"Detailed" code (Occurred 4th time)
C0	"Repaired by" code (Occurred 5th time) *1
C1	"Block function" code (Occurred 5th time)
C2	"Detailed" code (Occurred 5th time)
C4	"Repaired by" code (Occurred the last time) *1
C5	"Block function" code (Occurred the last time)
C6	"Detailed" code (Occurred the last time)

*1 : "01" → "C", "03" → "E"

Using method:

1) The past self-diagnosis codes are displayed at page: 7, address: BC to C6. Refer to "1-1. SELF-DIAGNOSIS FUNCTION" for detail of the self-diagnosis code.

Initializing method:

Order	Page	Address	Data	Procedure
1	7	01	C0	
2	7	00	01	Press PAUSE button.
3	7	B0 to C6		Check that the data is "00".
4	7	00	00	
5	7	01	00	

SONY

2-678-737-11(1)

Digital HD Videocassette Recorder

Operating Instructions

HDV HDV 1080i DVCAM™ DV Digital Video Cassette Mini DV Digital Video Cassette HDMI™ HIGH-DEFINITION MULTIMEDIA INTERFACE

HVR-M25U/M25N/M25E/M25P

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WARNING

To reduce fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

This unit must be connected to an earthed MAINS socket-outlet.

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Owner's record

The model number and the serial number are located at the name plate on the left of the unit. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. HVR-   Serial No. ____________________

Important Safety Instructions

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings.
  Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus.
  When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel.
  Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Notes on installation

- This unit is not designed as a portable. Make sure to install the unit properly on a flat surface. If you install the unit so that it is inclined 30 degrees or more (i.e., if you stand the unit on its side), malfunctions may occur.
- Do not place materials around the unit that may block the ventilation holes. Otherwise, heat builds up inside the unit and malfunctions may occur.
- Install the unit nearby the wall socket, disconnect the mains plug from the wall socket immediately if any malfunction occurs while using this unit.

For customers in the U.S.A.

HVR-M25U only

If you have any questions about this product, you may call: Sony's Business Information Center (BIC) at 1-800-686-SONY (7669)

or Write to: Sony Customer Information Services Center
6900-29 Daniels Parkway, PMB 330 Fort
Myers, Florida 33912

Declaration of Conformity

Trade Name:	SONY
Model:	HVR-M25U
Responsible Party:	Sony Electronics Inc.
Address:	16530 Via Esprillo, San Diego, CA 92127 U.S.A.
Telephone Number:	858-942-2230

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

NOTE:

This equipment has been tested and found to comply with the limits for Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

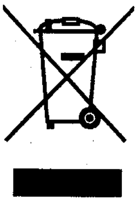
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Disposal of Waste Electrical and Electronic Equipment for business use (Applicable in the European Union and other European countries with separate collection systems)

This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead it shall be handed over to the applicable take-back scheme for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local Sony office or visit Sony Europe's web site for business customers:
http://www.sonybiz.net/environment



For the customers in Europe

HVR-M25E only

This product with the CE marking complies with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.
Compliance with these directives implies conformity to the following European standards:
- EN60065 :Product Safety
- EN55103-1 :Electromagnetic Interference (Emission)
- EN55103-2 :Electromagnetic Susceptibility (Immunity)

This product is intended for use in the following Electromagnetic Environment(s):
E1 (residential), E2 (commercial and light industrial), E3 (urban outdoors) and E4 (controlled EMC environment ex. TV studio).

ATTENTION

The electromagnetic fields at the specific frequencies may influence the picture and sound of this unit.

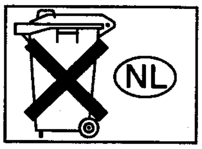
For the customers in the Nederland
Voor de klanten in Nederland

Dit apparaat bevat een vast ingebouwde batterij die niet vervanden hoeft te worden tijdens de levensduur van het apparaat.

Raadpleeg uw leverancier indien de batterij toch vervangen moet worden.
De batterij mag alleen vervangen worden door vakbekwaam servicepersoneel.

Gooi de batterij niet weg maar lever deze in als klein chemisch afval (KCA).

Lever het apparaat aan het einde van de levensduur in voor recycling, de batterij zal dan op correcte wijze verwerkt worden.



Caution

Television programs, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws. Also, use of this recorder with cable television transmission may require authorization from the cable television transmission and/or program owner.

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Chapter 1

Overview

Features

The HVR-M25U/M25N/M25E/M25P is a digital HD videocassette recorder supporting HDV format and DVCAM/DV format. The unit produces stable, superior picture quality by digital processing and separating image signals into color difference signals and a luminance signal (component video). The unit provides i.LINK (i HDV/DV) jack, HDMI OUT jack, COMPONENT OUT jacks, S VIDEO IN/OUT jacks, composite IN/OUT jacks, and AUDIO IN/OUT jacks. These jacks allow you to connect other equipment like non-linear editors. Additionally, it comes with a 2.7 (16:9)-type color LCD (liquid crystal display) monitor, you can easily check your recorded images, menus, and the audio level meters. The main features of the unit are described below.

HDV format

The unit can perform HDV (High-Definition Digital Video) recording and playback on a DVCAM format video cassette or a DV format video cassette.
The compression system of HDV format is the MPEG2 system adopted in the high-definition broadcasting and the Blu-ray Disk System.
The unit adopts the 1080 scanning lines (interlace (HDV 1080/60i and HDV 1080/50i)/1440 × 1080 pixels) format of the HDV specifications. The recording bit rate is approximately 25 Mbps. The unit is equipped with an i.LINK digital interface and can be digitally connected with HDV-compatible televisions or computers.

DVCAM/DV format

DVCAM is based on the consumer DV format, which uses the 4:1:1 component digital format (60i) or the 4:2:0 format (50i), and provides a 1/4-inch digital recording format for professional use. The unit provides both DVCAM format recording/playback and DV format in SP mode recording/playback.
For details, see "Compatibility of HDV, DVCAM, and DV Formats" on page 93.

Compatible with both 1080/60i (NTSC) and 1080/50i (PAL) systems

The unit is compatible with 60i and 50i systems. You can switch these input signals using the menu setting *(page 79)*. This compatibility allows you to record (download) or play back (upload) both 50i and 60i signals with your VCR, computer, or other equipment. However, the unit cannot convert the color system of the signals.
The unit set in 60i system has a field frequency of 59.94 Hz.

Features

High definition down convert function

When you want to playback a tape recorded in HDV format, you can down convert images to output them. This function allows you to preview recorded-images on a monitor which is not compatible with High-Definition (HD) format. Also, you can select an aspect ratio from SQUEEZE, LETTER BOX (except i HDV/DV jack output), or EDGE CROP.

16:9 Built-in color LCD monitor

The unit has a 2.7-type 16:9 color LCD (liquid crystal display) monitor that lets you verify images on the spot. You can see the setup menus, audio levels, and system statuses. Menus and data can be superimposed over the picture being displayed.

Multiple input/output interfaces

HDMI OUT jack, i HDV/DV jack, COMPONENT OUT jacks, S VIDEO jacks, VIDEO jacks and AUDIO jacks are equipped on the unit and enable the connection with various devices.

About HDMI (High Definition Multimedia Interface)

HDMI is an interface for connecting directly to a TV with digital pictures and digital audio signals. By connecting HDMI OUT jack to a HDMI compatible TV using a single HDMI cable, you can enjoy a high quality picture and digital sounds.

A variety of buttons and switches for VCR operations

The unit provides a variety of buttons for VCR operations, such as INPUT SELECT switch, AUDIO REC LEVEL, PHONE LEVEL control knob, and STATUS CHECK button.

Time code and user bits

On the unit, you can use time code and user bits. Using the menu, these can be set easily.

JOG AUDIO function

If you use the optional remote control unit DSRM-10 (not supplied), audio can be monitored at various playback speeds when in jog/shuttle mode.

Screen Language Setting

You can select the language.
The default language setting is English.
See page 77 to change the screen language.

Easy maintenance functions

- **Self-diagnostics/alarm functions:** The system automatically detects an invalid operation, bad connection or a malfunction, and displays a description, a cause and a recovery method on LCD monitor and outputs to HDMI OUT jack, COMPONENT OUT jacks, S VIDEO jack, and VIDEO jack.
- **Digital hours meter:** A digital hours meter counts four types of time data—operating time, drum rotation time, tape running time, and tape threading/unthreading. The digital hours data are indicated on the menu.

……

DVCAM, DV, and MiniDV are trademarks of Sony Corporation.

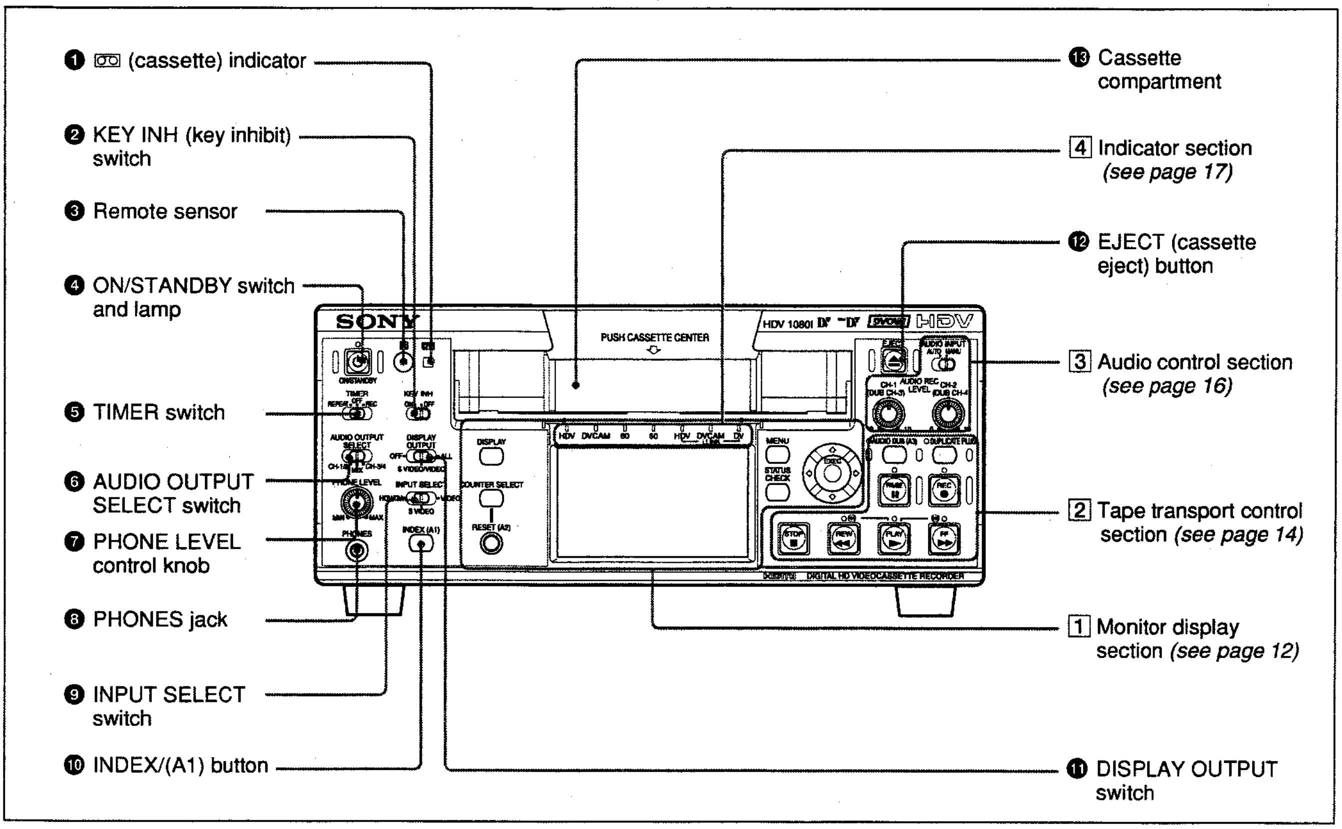
HDV is a trademark of Sony Corporation and Victor Company of Japan Ltd.

HDMI, HDMI, and High Definition Multimedia Interface is a trademark or a registered trademark of HDMI Licensing Interface LLC.

All other product names mentioned here may be the trademarks or registered trademarks of their respective companies. "™" and "®" are not mentioned in each case in this manual.

Location and Function of Parts

Front Panel


❶ 📼 (cassette) indicator
❷ KEY INH (key inhibit) switch
❸ Remote sensor
❹ ON/STANDBY switch and lamp
❺ TIMER switch
❻ AUDIO OUTPUT SELECT switch
❼ PHONE LEVEL control knob
❽ PHONES jack
❾ INPUT SELECT switch
❿ INDEX/(A1) button
⓭ Cassette compartment
4 Indicator section (see page 17)
⓬ EJECT (cassette eject) button
3 Audio control section (see page 16)
2 Tape transport control section (see page 14)
1 Monitor display section (see page 12)
⓫ DISPLAY OUTPUT switch
SONY
PUSH CASSETTE CENTER
HDV 1080i
HDV
DIGITAL HD VIDEOCASSETTE RECORDER

❶ 📼 (cassette) indicator

Lights when a digital video cassette is loaded.
Does not light up while the unit is not loading a cassette.
This indicator blinks while a cassette is being ejected.
For details, see "Inserting/Ejecting Cassettes" on page 31.

❷ KEY INH (key inhibit) switch

Turning on this switch disables all buttons to prevent accidental button operations.

Notes

- Even when this switch is set to ON, the switches ❺, ❻, ❾, and 3-❶, the switch ❹ on the rear panel, and the knobs ❼ and 3-❷ can be controlled.
- Even when you set this switch to ON, you can operate the unit with Remote Commander, LANC jack, CONTROL S jack, and i HDV/DV jack.

❸ Remote sensor

Note

In addition to Remote Commander supplied with the unit, the unit accepts signals from any Sony Remote Commander whose command mode is set to VTR4. To disable the control from Remote Commander, set [COMMANDER] in [OTHERS] menu to [CONTROL S].

❹ ON/STANDBY switch and lamp

Press this switch to turn the unit on, and ON/STANDBY lamp lights up green. When you press this switch again, the unit goes into STANDBY mode and the lamp lights up red.

Note

When KEY INH switch ❷ is set to ON, ON/STANDBY switch does not work. Set KEY INH switch to OFF to enable ON/STANDBY switch.

(Continued)

❺ TIMER switch

Use to select Auto Repeat or recording using an external AC timer (not supplied).

REPEAT: When the power is supplied to the unit, the tape rewinds to its beginning automatically and playback starts. When the following items on the tape are searched, AUTO REPEAT playback starts automatically.

- Index signals
- A portion unrecorded
- A portion recorded in the format set by other than [AUTO] in [HDV/DV SEL] in [IN/OUT REC] menu
- Tape end

Auto Repeat also functions if you set this switch to REPEAT during playback or rewind.

For details on Auto Repeat, see "AUTO REPEAT (CUSTOM REPEAT)" on page 39 and "CUSTOM REPEAT" in "VTR SET" menu on page 74.

OFF: Auto Repeat or timer recording is released.

REC: Recording begins the moment the power is connected to the unit.

Note

The setting of this switch still activates even when KEY INH switch ❷ is set to ON.

❻ AUDIO OUTPUT SELECT switch

When the audio mode is 32 kHz (4-channel), use this switch to select the audio channel to be output via HDMI OUT jack, AUDIO jacks in OUTPUT as well as PHONES jack ❽.

CH-1/2: channels 1/2 only
MIX: channels 1/2 and channels 3/4
CH-3/4: channels 3/4 only

Notes

- During audio dubbing, if you want to listen to the sound recorded on the tape, set this switch to CH-1/2; if you want to listen to the sound being dubbed, set the switch to CH-3/4. (Only channels 3 and 4 can be used to dub.) To check the sound to be dubbed before dubbing, set this switch to CH-3/4, then press AUDIO DUB button while the unit is in the stop mode. Then you can listen to the sound of the channels used to dub (channels 3 and 4) at a moment.
For details on the audio dubbing, see page 60. Also refer to the instructions of "AUDIO DUB / (A3) ❶" button on page 14.
- When the audio mode is 48 kHz (2-channel), sounds of channel 1 and 2 are output via HDMI OUT jack, AUDIO jacks in OUTPUT, and PHONES jack ❽ regardless of the position of this switch.
- When this switch is set to MIX, the sound of the mixed level of the pair of channel 1 and 3 and that of channels 2 and 4 is output. The audio output level becomes 50 % (–6 dB) of the original audio levels on each channel.

❼ PHONE LEVEL control knob

Controls the volume of the headphones connected to PHONES jack ❽.

❽ PHONES jack

Connect stereo headphones for monitoring sounds during recording or playback. The audio signals you want to monitor can be selected with AUDIO OUTPUT SELECT switch ❻. By changing the setting of [AUDIO MONI] in [AUDIO SET] *(page 73)*, you can monitor the sound of a particular channel.

❾ INPUT SELECT switch

Switch the signal input jack from i HDV/DV jack, S VIDEO jack, and VIDEO jack.

HDV/DV : Inputs a signal from i HDV/DV jack.
S VIDEO : Inputs a signal from S VIDEO jack.
VIDEO : Inputs a signal from VIDEO jack.

Notes

- Do not change the setting of this switch while recording in progress, or it causes noise added to images and sounds. Also, a part of the tape where the change of setting applied will not be recorded properly. The time code may be recorded discontinuously.
- If you change the setting of this switch while recording in progress, the output signal via i HDV/DV jack may be interrupted. Also, the unit may detect signals such as a copyright information signal incorrectly.
- When a signal is input via i HDV/DV jack, the settings of the menu listed below are unavailable.
  - 60i/50i SEL
  - AUDIO MODE
  - AUDIO LOCK
  - AUDIO INPUT LEVEL (–10/–2/+4) switch
  - AUDIO REC LEVEL control knob
  - AUDIO INPUT (AUTO/MANU) switch

⑩ INDEX/(A1) button

Press this button to write an index mark while recording. Index is useful when you search for scenes on a tape. Also, this button can be used as ASSIGN (A1) button.

For detail on Index, see "Recording Functions" on page 47.

When you change ASSIGN buttons setting with [ASSIGN (A1)] of [ASSIGN BTN] in [OTHERS] menu, this button executes the function you have set.

For details on ASSIGN buttons, see "ASSIGN BTN" on page 77.

⑪ DISPLAY OUTPUT switch

Selects the destination for the text data to be superimposed via output jacks.

- **OFF :** Does not superimpose text data to output
- **S VIDEO/VIDEO :** Superimposes text data to S VIDEO OUT jack and VIDEO jack.
- **ALL :** Superimposes text data to HDMI OUT jack, COMPONENT OUT jacks, S VIDEO OUT jack, and VIDEO OUT jack.

⑫ EJECT button

Press this button to eject a cassette. If you press this button while a cassette is inside the unit, the cassette is ejected.

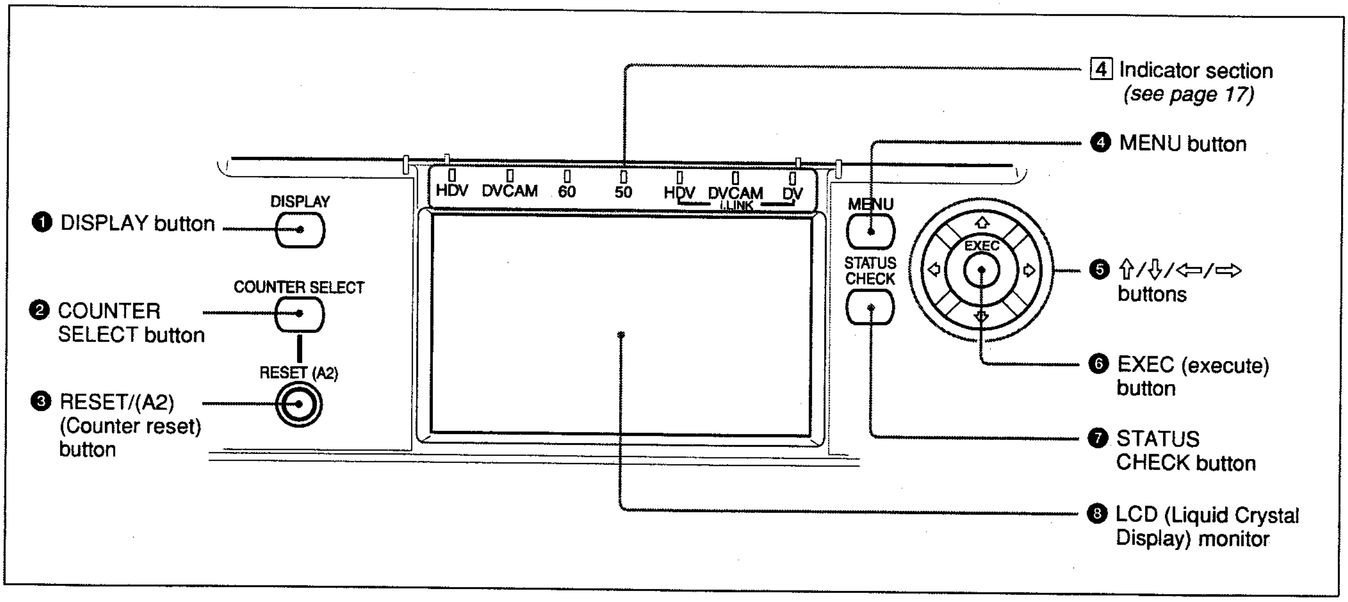
⑬ Cassette compartment

Insert a standard-size or mini-size cassette.

For details on cassettes that can be used, see "Notes on Power Supply and Video Cassettes" on page 30.

Location and Function of Parts

1 Monitor display section


4 Indicator section (see page 17)
❹ MENU button
❺ ⇧/⇩/⇦/⇨ buttons
❻ EXEC (execute) button
❼ STATUS CHECK button
❽ LCD (Liquid Crystal Display) monitor
❶ DISPLAY button
❷ COUNTER SELECT button
❸ RESET/(A2) (Counter reset) button
DISPLAY
COUNTER SELECT
RESET (A2)
HDV
DVCAM
60
50
HDV
DVCAM
DV
i.LINK
MENU
STATUS CHECK
EXEC

❶ DISPLAY button

Change the text data displayed on LCD monitor or the text data output from video jacks on the rear panel of the unit. By pressing this button, the unit displays the picture only, picture and data, or picture and time counter.

For details on various data, see "Displaying Various Data" on page 25.

❷ COUNTER SELECT button

While displaying the data or time counter, press this button to change the time counter display in the order of time code, user bits, and tape counter.

Count value of the tape counter (seven digits) is displayed on a ±12-hour cycle.

Note

The count value of the counter of the unit is determined by calculation based on the time code, that is, simple approximation. Therefore, in cases such as the following, the value may be inaccurate.

- There is a portion where the time code is not continuous on the tape you are using.
- The time code in both the drop frame mode and the non-drop frame mode are recorded on the tape you are using (for 60i only).
- There is a blank portion between recorded portions on the tape you are using.
- A tape recorded using 50i system is being used in the unit when [60i/50i SEL] in [OTHERS] menu is set to [60i].
- A tape recorded using 60i system is being used in the unit when [60i/50i SEL] in [OTHERS] menu is set to [50i].
- [TC RUN] in [TC/UB SET] menu is set to [FREE RUN].

❸ RESET (Counter reset)/(A2) button

Press this button, when the count value of the counter is displayed. The count value is reset to 0:00:00:00.

Also, this button can be used as ASSIGN (A2) button. When you change ASSIGN button setting with [ASSIGN (A2)] of [ASSIGN BTN] in [OTHERS] menu, this button executes the function you have set.

For details on ASSIGN buttons, see "ASSIGN BTN" on page 77.

Notes

- This button does not reset the value of the time code or user bits.
- To reset the value of the time code or user bits, use [TC PRESET] or [UB PRESET] in [TC/UB SET] menu.

❹ MENU button

Press this button to display the menu on screen.
For details on the menu, see "Operating the Menus" on page 65.

❺ ⇧/⇩/⇦/⇨ buttons

Use these buttons in menu settings and other settings.
You can adjust the brightness of images by pressing ⇧/⇩ buttons, while the data (format, the tape running mode) is displayed on the LCD screen.
The display of the brightness level adjustment disappears in a second after the adjustment completes.
While the time counter is displayed, the position of the time counter moves up and down by pressing ⇧/⇩ buttons. When the small size time counter is displayed, the position of the time counter moves not only to the up and down, but also to the right and left by pressing ⇦/⇨ buttons.
While STATUS CHECK screen is displayed, you can switch the screen by pressing ⇧/⇩ buttons.

❻ EXEC (execute) button

Use this button in menu settings.

❼ STATUS CHECK button

Press this button to check the audio level and menu settings. To display STATUS CHECK screen, press STATUS CHECK button.
Every time you press ⇧/⇩ buttons, STATUS CHECK screen switches in the order of AUDIO, OUTPUT, ASSIGN, and CUSTOM REPEAT. To hide STATUS CHECK screen, press STATUS CHECK button again.

Note

Audio level meter display varies depending on the settings of [AUDIO MODE] in [AUDIO SET] menu, AUDIO OUTPUT SELECT switch, and the audio mode on the tape played back.

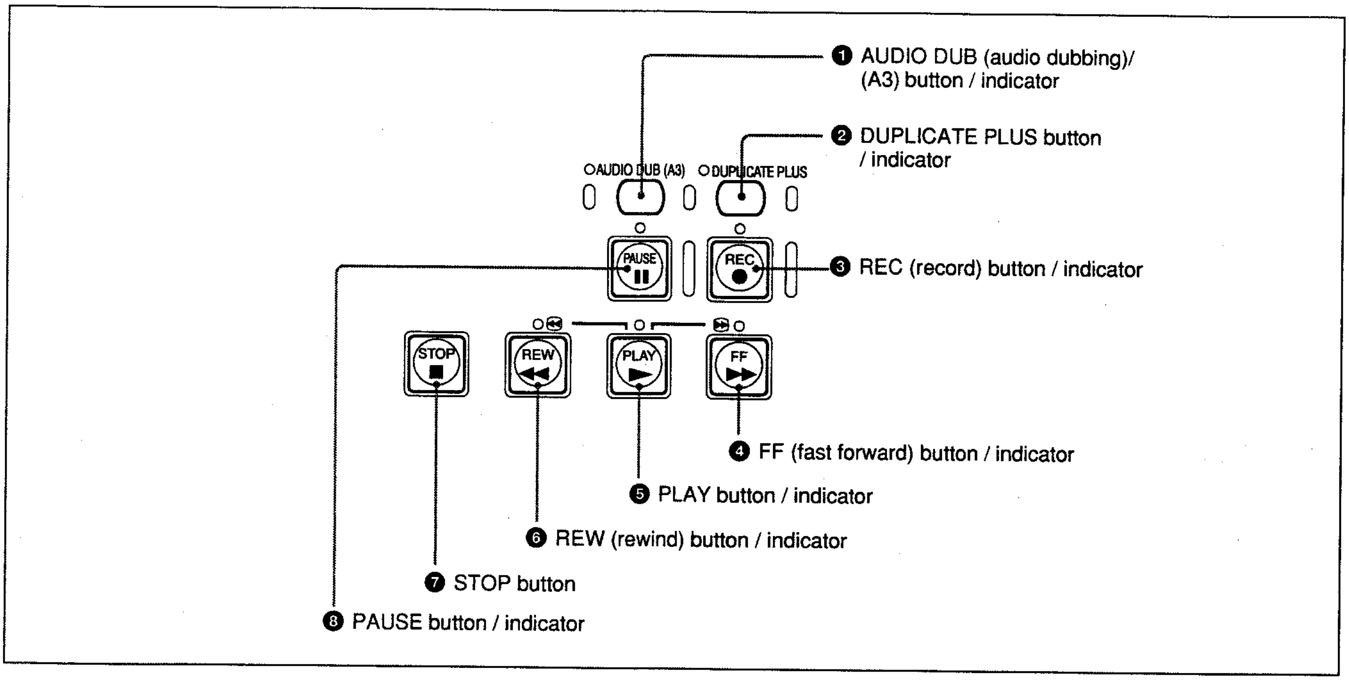
❽ LCD (Liquid Crystal Display) monitor

Display the playback or EE1) pictures. Also, superimposed time data, status information, menus, audio level meters, etc. are displayed.

---

1) "EE" stands for "Electric to Electric." In EE mode, the video and audio signals input to the VCR's recording circuitry do not pass through any magnetic conversion circuits but output via electric circuits only. This mode is used to check the input signals and adjust input levels. The pictures output in EE mode are referred to as EE pictures.

2 Tape transport control section


❶ AUDIO DUB (audio dubbing)/ (A3) button / indicator
❷ DUPLICATE PLUS button / indicator
AUDIO DUB (A3)
DUPLICATE PLUS
PAUSE
REC
❸ REC (record) button / indicator
STOP
REW
PLAY
FF
❹ FF (fast forward) button / indicator
❺ PLAY button / indicator
❻ REW (rewind) button / indicator
❼ STOP button
❽ PAUSE button / indicator

❶ AUDIO DUB (audio dubbing)/ (A3) button / indicator

Use this button to dub sounds. The indicator lights while sounds are being dubbed. Also, this button can be used as ASSIGN (A3) button.

For details on audio dubbing, see "Audio Dubbing" on page 60.

When the unit is in the stop mode and INPUT SELECT switch is set to other than HDV/DV, you can check EE signals of the sound (channels 3 and 4) to be dubbed by pressing this button. While the operation is in progress, the indicator lights. To stop the operation, press STOP button.

For details, see "EE/PB SEL" in "IN/OUT REC" menu on page 71.

When you change ASSIGN buttons setting with [ASSIGN (A3)] of [ASSIGN BTN] in [OTHERS] menu, this button executes the function you have set.

For details on ASSIGN buttons, see "ASSIGN BTN" on page 77.

❷ DUPLICATE PLUS button/indicator

Use to duplicate a tape, including the time code. While duplication is in progress, the indicator lights.

For details on the duplicate function, see "Duplication (generating a work tape with the same time code)" on page 56.

When the unit is in the stop mode and HDV/DV signals is selected and input, you can check EE signals for an image, sound and time code by pressing this button. While you are checking EE signals, the indicator lights. To stop this operation, press STOP button.

For details, see "EE/PB SEL" in "IN/OUT REC" menu on page 71.

For details on time codes, see "HVR-M25U/M25N/M25E/M25P time codes" on page 53.

❸ REC (record) button / indicator

When you press and hold this button, then press PLAY button, the each indicator lights and recording starts. If you press this button while the tape is stopped, you can check EE picture and audio signals for a moment. When HDV/DV is selected, if [HDV/DV IN TC] in [TC/UB SET] menu is set to [EXTERNAL], you can also check the EE time code signals. Press STOP button to end the check.

For details, see "EE/PB SEL" in "IN/OUT REC" menu on page 71.

For details on time code, see "TC/UB SET" on page 75.

Notes

- The unit does not have an LP recording mode of the consumer DV format. Only SP recording mode is available.
- To set the unit to recording pause mode with the remote control unit DSRM-10 (not supplied), press PAUSE button while holding down PLAY button to set the unit to the playback pause mode, then press REC button on the DSRM-10.
- When the recording mode is set in HDV format, it may take a few seconds to start recording. During this time, REC indicator blinks.

❹ FF (fast forward) button / indicator

When you press this button, the indicator lights and the tape is fast forwarded. During fast forward, the picture does not appear on the monitor. (you can see the picture as it is seen in EE mode during fast forward.) To locate a scene while monitoring the picture, keep pressing this button during fast forward, playback or in playback pause mode (picture search).

For details on [VTR SET] menu, see "VTR SET" on page 74.

Notes

- If you set [EE/PB SEL] in [IN/OUT REC] menu to [PB], EE picture and EE audio signals are not output.
- If you set [FF/REW SPEED] in [VTR SET] menu to [SHUTTLEMAX], the picture is played back during fast forward.
  For details on running speed with [SHUTTLEMAX], see "FF/REW SPEED" in "VTR SET" menu on page 74.

❺ PLAY button / indicator

When you press this button, the indicator lights and playback begins.

If you press this button while holding down REW button during stop, the tape is rewound to its beginning and starts playing automatically (during rewind, REW indicator lights and PLAY indicator blinks).

Notes

- When the unit is playing back a part of the tape where the recording format has been changed among HDV format, DVCAM format, and DV format, or between 60i format and 50i format, the picture and sound may be distorted.
- The unit cannot play back a tape recorded in the LP recording mode of the consumer DV format.

❻ REW (rewind) button / indicator

When you press this button, the indicator lights and the tape starts rewinding. During rewind, the picture does not appear on the monitor. (you can see the picture as it is seen in EE mode during rewind.) To locate a scene while monitoring the picture, hold this button down during rewind, playback or in the playback pause mode.

If you press PLAY button while holding down this button during stop, the tape is rewound to its beginning and starts playing automatically (during rewind, REW indicator lights and PLAY indicator blinks).

For details on [VTR SET] menu, see "VTR SET" on page 74.

Notes

- If you set [EE/PB SEL] in [IN/OUT REC] menu to [PB], EE picture and EE audio signals are not output.
- If you set [FF/REW SPEED] in [VTR SET] menu to [SHUTTLEMAX], the picture is played back during fast forward.
  For details on running speed with [SHUTTLEMAX], see "FF/REW SPEED" in "VTR SET" menu on page 74.

❼ STOP button

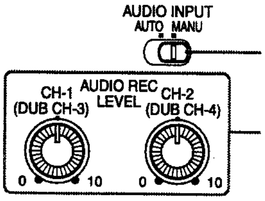
Press this button to stop the tape transport operation completely.

❽ PAUSE button / indicator

Press this button to set the unit to pause mode. The indicator lights while recording, playing, or audio dubbing. Press this button again to resume the operation.

3 Audio control section

During normal recording, sounds are recorded onto channels 1 and 2; they cannot be recorded onto channels 3 and 4. During audio dubbing, sounds are dubbed onto channels 3 and 4.



❶ AUDIO INPUT (AUTO/MANU) switch

Switches the audio recording level adjustment mode.

AUTO : Adjusts AUDIO REC LEVEL automatically. (Adjustment of AUDIO REC LEVEL control knobs ❷ is disabled.)
For acceptable recording level, see the table below.

AUDIO INPUT LEVEL switch	Acceptable level (max.)
–10	+18 dBu
–2	+24 dBu
+4	+30 dBu

MANU : Enables AUDIO REC LEVEL control knobs ❷.

Notes

- When i.LINK signals are input to the unit, the sound recorded retains the signal level input, regardless of the setting of this switch.
- Even this switch is set to AUTO, the setting is not effective against the volume which exceeds the dynamic range of the input amplifier.
- If you input a sound whose level exceeds the acceptable range, the recorded sound is distorted.

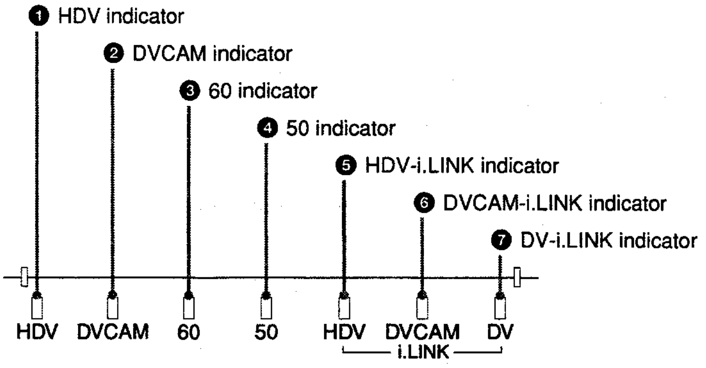
❷ AUDIO REC LEVEL control knobs (CH-1 (DUB CH-3), CH-2 (DUB CH-4))

To perform normal recording using these knobs, adjust the levels of the analog audio signals input to the unit (channel 1 and 2). To perform audio dubbing using these knobs, adjust the levels of channel 3 and 4.
These knobs are enabled only when AUDIO INPUT (AUTO/MANU) switch ❶ is set to MANU.
To display the audio level meters on LCD monitor, press STATUS CHECK button.
For details on the audio level meter, see "STATUS CHECK screen" on page 27.

Note

You cannot adjust the audio level using these knobs while i.LINK signals is input.

4 Indicator section



❶ HDV indicator

Lights when the unit is in the following operating status.

- When a tape recorded in HDV format is being played back.
- When HDV signals are input through the i.LINK interface.
- When [HDV/DV SEL] in [IN/OUT REC] menu is set to [HDV].*

* Even when [HDV/DV SEL] in [IN/OUT REC] menu is set to [AUTO] with no signal input, while the last signal input was HDV format or the last tape played was HDV format, this indicator lights.

❷ DVCAM indicator

Lights when the unit is in the following operating status.

- When a tape recorded in DVCAM format is being played back.
- When [HDV/DV SEL] in [IN/OUT REC] menu is set to [DV] and [▣ REC MODE] in [IN/OUT REC] menu is set to [DVCAM] (during recording or in EE mode).*

* Neither HDV indicator nor DVCAM indicator lights during recording in DV (SP) format or a playback of a tape recorded in DV (SP) format.

❸ 60 indicator

Lights when the unit is in the following operating status.

- During recording or in EE mode when [60i/50i SEL] in [OTHERS] menu is set to [60i].
- During HDV1080/60i or NTSC signals are input from i HDV/DV jack.
- A tape that has HDV1080/60i or NTSC signals is being played back.

❹ 50 indicator

Lights when the unit is in the following operating status.

- During recording or in EE mode when [60i/50i SEL] in [OTHERS] menu is set to [50i].
- During HDV1080/50i, or PAL signals are input from i HDV/DV jack.
- A tape that has HDV1080/50i or PAL signals is being played back.

❺ HDV-i.LINK indicator

Lights when HDV signals are input/output through the i.LINK interface.

❻ DVCAM-i.LINK indicator

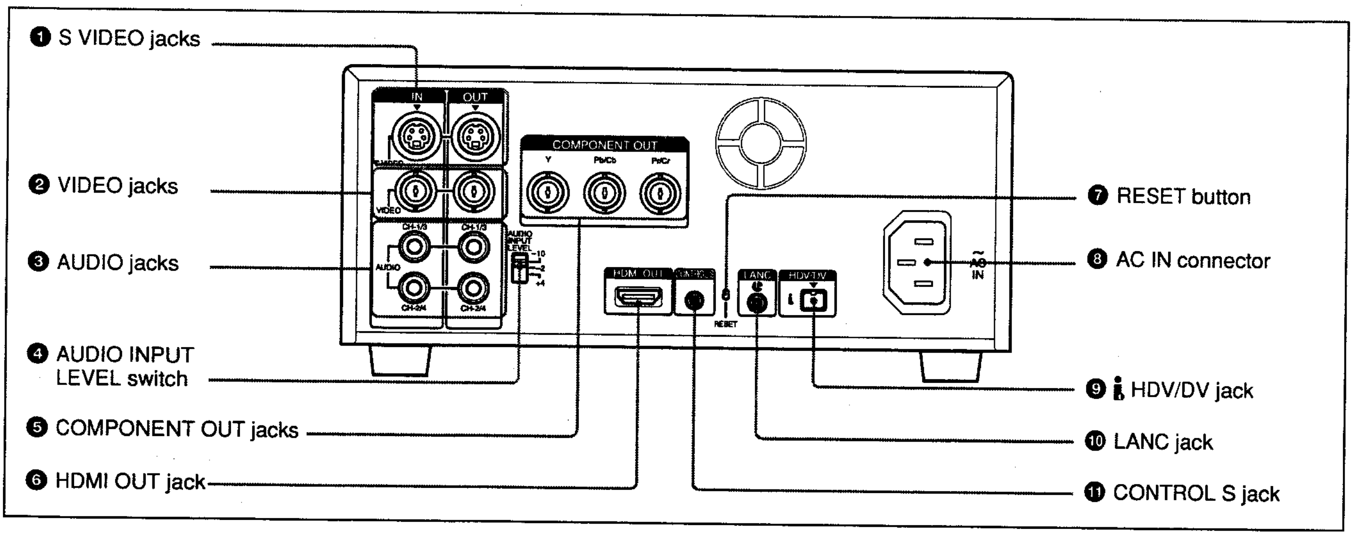
Lights when DVCAM signals are input/output through the i.LINK interface.

❼ DV-i.LINK indicator

Lights when DV signals are input/output through the i.LINK interface.

Location and Function of Parts

Rear Panel


❶ S VIDEO jacks
❷ VIDEO jacks
❸ AUDIO jacks
❹ AUDIO INPUT LEVEL switch
❺ COMPONENT OUT jacks
❻ HDMI OUT jack
❼ RESET button
❽ AC IN connector
❾ i HDV/DV jack
❿ LANC jack
⓫ CONTROL S jack
IN
OUT
S VIDEO
VIDEO
AUDIO
CH-1/3
CH-2/4
AUDIO INPUT LEVEL
-10
-2
+4
COMPONENT OUT
Y
Pb/Cb
Pr/Cr
HDMI OUT
CONTROL S
LANC
HDV/DV
RESET
AC IN

❶ S VIDEO jacks

To connect a device equipped with S video jack, use S VIDEO jacks on the unit.

If you use S VIDEO jacks, you can input/output high-quality video with less signals deterioration in quality than the one connected to the standard VIDEO jack. When DISPLAY OUTPUT switch is set to S VIDEO/ VIDEO or ALL, text data such as the time code, menus, and alarm messages are superimposed on an external monitor connected to S VIDEO jack *(page 25).*

For details on the output of S VIDEO jack, see "Notes on all video output jacks" (page 22).

❷ VIDEO jacks

Use to input and output analog video signals.

Text data is superimposed on a monitor in the same way as S VIDEO jack connection *(page 25).*

For details on the output of VIDEO jack, see "Notes on all video output jacks" (page 22).

❸ AUDIO jacks

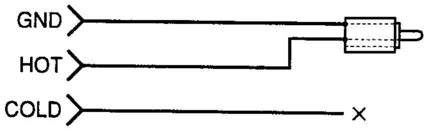
Use to input and output analog audio signals.

During normal recording, sounds are recorded onto channels 1 and 2. During audio dubbing, sounds are dubbed onto channels 3 and 4. When AUDIO OUPUT SELECT switch on the front panel of the unit is set to MIX, the audio output level becomes 50% (–6 dB) of the original audio levels on each channel.

Notes

- In the audio dubbing mode, CH1/3 and CH2/4 jacks function as the channel 3 and channel 4 input jacks, respectively.
- To input balanced audio signals via AUDIO jacks, use a conversion cable as shown below. (The COLD side is open.)

  For details on conversion cables, refer to the instruction manual of the devices you use.


GND
HOT
COLD
×

❹ AUDIO INPUT LEVEL (–10/–2/+4) switch

Select one from –10 dB, –2 dB, or +4 dB according to the audio level of the signal input via AUDIO IN jacks.

Note

If this switch setting is not appropriate, clipping distortion or noise may occur.

For more information on the setting of this switch, see "When you set AUDIO INPUT LEVEL switch" on page 86.

❺ COMPONENT OUT jacks

Use to output component signals.

To connect a device equipped the component video input connector, use COMPONENT OUT jacks on the unit. If you use COMPONENT OUT jacks, you can output high-quality video with less signal deterioration in quality than S VIDEO jack.

You can set the output video format by using [HDMI/CMPNT] of [VIDEO OUT] in [IN/OUT REC] menu.

When DISPLAY OUTPUT switch is set to ALL, text data such as time code, menu, and alarm message are superimposed on a monitor connected using COMPONENT OUT jacks *(page 25).*

Notes

- When images are output in 720p format, some of the text image data (outer frame: underscan portion) on the monitor may appear cut out. In this case, check the text image data on LCD monitor of the unit or on a monitor using S VIDEO OUT jack or the VIDEO OUT jack. Also, when your monitor has an underscan function, you can check all the text data on the monitor during underscan.
- When you change the video format setting of [HDMI/CMPNT] of [VIDEO OUT] in [IN/OUT REC] menu, the video signal output from S VIDEO jack, VIDEO jack, or i HDV/DV jack may be distorted for a moment.
- When you play back an HDV-formatted tape with copyright protected signals or input HDV signals with copyright protection to i HDV/DV jack, pictures may be output in either 480i (NTSC) or 576i (PAL) format, regardless of the setting of [HDMI/CMPNT] of [VIDEO OUT] in [IN/OUT REC] menu.
- When you play back a tape in DVCAM/DV format and while an EE picture in NTSC/PAL is displayed, the 480i resolution or the 576i resolution is output, regardless of the setting of [HDMI/CMPNT] of [VIDEO OUT] in [IN/OUT REC] menu.
- The output level of COMPONENT OUT jacks is as follows:

  Output at 480i NTSC

  With [BETACAM] selected in [IN/OUT REC] menu

    Y: 1.0 Vp-p
    (with 0.286 Vp-p sync negative,
    output impedance 75 Ω (ohms), unbalanced)
    Pb/Cb/B-Y, Pr/Cr/R-Y: 0.7 Vp-p
    (output impedance 75 Ω (ohms), unbalanced)
    (75% color bars with 7.5 IRE setup)

  With [SMPTE] selected in [IN/OUT REC] menu

    Y: 1.0 Vp-p
    (with 0.3 Vp-p sync negative,
    output impedance 75 Ω (ohms), unbalanced)
    Pb/Cb/B-Y, Pr/Cr/R-Y: 0.7 Vp-p
    (output impedance 75 Ω (ohms), unbalanced)
    (100% color bars with no setup)

  Output with other settings

    Y: 1.0 Vp-p
    (output impedance 75 Ω (ohms), unbalanced)
    Pb/Cb/B-Y, Pr/Cr/R-Y: 0.7 Vp-p
    (output impedance 75 Ω (ohms), unbalanced)
    (100% color bars with no setup)
    480i/480p:
    Y: with 0.3 Vp-p sync negative
    1080i/720p:
    Y/Pb/Pr: with 0.6 Vp-p 3-level sync

(Continued)

❻ HDMI OUT jack

Use to output HDMI signals. HDMI OUT jack outputs both pictures and audio.

To connect a device which equipped HDMI input connector, use HDMI OUT jack on the unit.

HDMI OUT jack outputs high-quality video with even less signal deterioration in quality than COMPONENT OUT jacks.

You can set the output video format by using [HDMI/CMPNT] of [VIDEO OUT] in [IN/OUT REC] menu.

Text data is superimposed on a monitor in the same way as COMPONENT OUT jacks connection *(page 25)*.

Notes

Use an HDMI cable with HDMI logo.

When you connect the unit with other device, some of the devices do not display pictures or sounds. Also, when you connect the unit in the way described below, the unit or the device connected to the unit may be damaged.

- When HDMI OUT jack on the unit is connected to the HDMI OUT jack on the device.
- When HDMI OUT jack on the unit is connected to the HDMI OUT jack of the same unit.

There are following restrictions on the output of HDMI OUT jack.

- When you play back an HDV-formatted tape with copyright protected signals or input HDV signals, including copyright protected signals via i HDV/DV jack, pictures and audio cannot be output from HDMI OUT jack. (Copy-protected signals and programs such as digital broadcasts are also included.)
- You cannot output EE picture of analog video (NTSC, PAL) that are input from VIDEO IN jack, S VIDEO IN jack to HDMI OUT jack. In this case, text data and menus cannot be displayed either. When you play back a DVCAM or DV (SP)-formatted tape recorded in either NTSC or PAL format, pictures are output to HDMI OUT jack.
- You cannot output EE picture and sound of DVCAM/DV signals (NTSC, PAL) that are input from i HDV/DV jack to HDMI OUT jack.
- Sounds output via HDMI OUT jack of the unit is 2-channel (stereo). In case of playing back a tape recorded in 4-channel (32 kHz), audio recording, or pausing audio recording, to output the sound of CH3 and CH4 during post recording, select CH-3/4 with AUDIO OUTPUT SELECT switch. By selecting MIX with this switch, mixed sounds can be output to HDMI OUT jack as well.
- Sounds output via HDMI OUT jack are output with 16 bit of 48 kHz, 2-channel linear PCM mode regardless of the tape played back, the setting of the menus, or the signal format input to i HDV/DV jack.
- When images are output in 720p format, some of the text image data (outer frame: underscan portion) on the monitor may appear cut out. In this case, check the text image data on LCD monitor of the unit or on a monitor using S VIDEO OUT jack or VIDEO OUT jack. Also, when your monitor has an underscan function, you can check all the text data on the monitor during full screen underscan.
- When you change the video format setting of [HDMI/CMPNT] of [VIDEO OUT] in [IN/OUT REC] menu, the video signal output from S VIDEO jack, VIDEO jack, or i HDV/DV jack may be distorted.
- If a monitor or other device connected to the unit does not have a resolution display mode selected with [HDMI/CMPNT] of [VIDEO OUT] in [IN/OUT REC], noise may occur on the picture of the monitor, or a humming noise may be output from the speakers. Also, the picture may not be displayed or the sound may not be output. Be sure to check the displayable resolutions of the monitor by referring the operational instructions of your monitor, and select the appropriate menu for the unit.
- Depending on the monitor you have, the picture and sound on the monitor may be distorted when you change the resolution of the picture. This is not a malfunction.

❼ RESET button

If you press this button with the tip of a ballpoint pen or similar tool, the following settings are initialized.

- [CLOCK SET] *(page 78)* and [60i/50i SEL] *(page 79)* in [OTHERS] menu.
- The setting on the unit except the menu settings.

❽ AC IN connector

Connects to an AC outlet using the supplied power cord.

Even if the unit is in the standby mode, it consumes power. To turn the unit off completely, pull the plug out from the AC outlet.

⑨ ℹ HDV/DV jack (4-pin)

Use this jack to input/output the digital signals that complies with the i.LINK standard. Use when a device connected to the unit has an i.LINK jack. If you connect the unit and another device using ℹ HDV/DV jack, you can minimize deterioration of picture quality during recording, dubbing, or capturing still pictures, all by means of digital signals processing.

For details, refer to the instruction manual of the external device.

Notes

- When you connect with the i.LINK cable to a computer and the unit, check the direction of the jack. If you forcibly insert the jack, the terminal may be damaged or cause the unit to malfunction. Align ▲ mark of the i.LINK cable with ▼ mark on the unit and insert the i.LINK cable.
- This jack is only compatible with HDV (1080i)/ DVCAM/DV signals.
  For details, see "About i.LINK" on page 98.
- If video signals have been input to ℹ HDV/DV jack and you output these video signals to the S VIDEO or VIDEO connectors, the sync and burst of the corresponding EE picture is not synchronized.
- If the unit is connected to a device equipped with a 6-pin i.LINK jack, when you intend to disconnect or reconnect the i.LINK cable, turn off the device and pull out the plug of its power cord from the AC outlet beforehand. If you connect or disconnect the i.LINK cable while the device is connected to the AC outlet, high-voltage current (8 to 40 V) is output from i.LINK jack of the device to the unit. This may cause a malfunction.
- When connecting a device that has a 6-pin i.LINK jack to the unit, connect the plug of the cable to the 6-pin i.LINK jack first.
  For details on each setting when HDV/DV signals are input, see "HDV/DV SEL" (page 67).
- Video signal which is input from ℹ HDV/DV jack will be output directly to COMPONENT OUT jacks, S VIDEO jack, and VIDEO jack with the jitter of i.LINK signal. This jitter may be displayed on the connected monitor. Be aware of this jitter when you connect other recording device to for these jacks. This jitter will not appear on a recording with the unit.
- When you change the video format setting of [HDMI/ CMPNT] in [VIDEO OUT] of [IN/OUT REC] menu, the video signal output from S VIDEO OUT jack, VIDEO OUT jack, or ℹ HDV/DV jack may be distorted.
  For details on the output of ℹ HDV/DV jack, see "Notes on all video output jacks" (page 22).

⑩ LANC jack

Use this jack when controlling the tape transport operation of the unit using a device that has a LANC[1] jack.

Notes

- LANC jack on the unit has only LANC-S functions. The unit has no LANC-M functions. A device that is set to LANC-S mode cannot be connected to the unit. Either this, the unit or the other device may not operate properly.
- When using the unit as a player, set LANC mode on the recorder to M. A VCR that does not have M/S switching function cannot be used to control the unit.
- When the device for connecting to the unit has [LANC-M] function to switch between SHUTTLE A/ B, select SHUTTLE A for HDV-formatted tape, and SHUTTLE B for the DVCAM/DV (SP)-formatted tape.
- LANC connection transmits command signals for playback, stop, pause playback, as well as the time code, tape counter, and data status of the unit.
- Jacks labeled CONTROL L have the same function as LANC jacks.
- There are some limitations when you edit an HDV-formatted tape.
  Refer to the "Notes" in "Editing (Connecting with a Computer)" on page 62.

⑪ CONTROL S jack

Connect to a remote control unit DSRM-10 (not supplied) for controlling the unit.
You can use DSRM-20 (no longer manufactured: not supplied).

Note

When you use a CONTROL S device, set [COMMANDER] in [OTHERS] menu to [CONTROL S].

(Continued)

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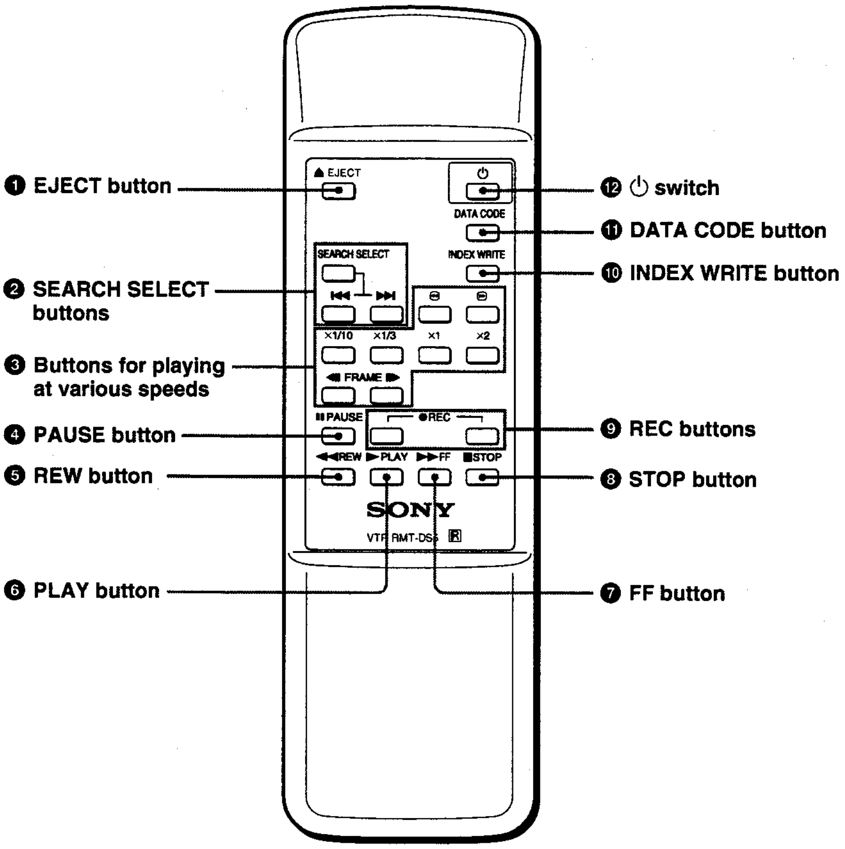
[1] LANC (Local Application Control bus system): Bidirectional interface used to control a consumer VCR

Notes on all video output jacks

- When you change the video format setting of [HDMI/CMPNT] and [DOWN COVERT] of [VIDEO OUT] in [IN/OUT REC] menu, [ALLSCAN MODE] in [DISPLAY SET] menu, or [HDV → DV CONV] and [DOWN CONVERT] in [i.LINK SET], the image may be distorted for a moment. Also, the above settings may cause the restrictions on the video output of the unit.
  For details, refer to the table on page 85 and the instructions of each menu setting.
- When you change the video format setting of [HDMI/CMPNT] of [VIDEO OUT] in [IN/OUT REC] menu, the video signals output from S VIDEO OUT jack, VIDEO OUT jack, or i HDV/DV jack may be distorted.
- The unit is only compatible with standard video signals. If you input the types of video signals shown below, recorded picture and sound may be distorted.
  - Signals from some home game machines
  - Blue background screen or gray background screen from a consumer VCR
  - Pictures played at a speed other than normal by a VCR that does not have the TBC (Time Base Corrector)
  - Video signals in which the sync signals are distorted
  - Signals from a defective cassette (tape or recording condition is bad) played by an analog VCR that does not have TBC
- To absorb the jitter of input video signals, the distortion of video signals are processed in the underscan portion. You may see this procedure on an underscan monitor, yet this is not a malfunction. Also, the picture recorded on the tape will not be affected.
- During recording or in EE mode, the subcarrier of the color signal to be output from the unit is not synchronized with the horizontal sync signal. The color of the picture or the horizontal position of the picture may be distorted depending on the type of monitor connected to the unit.
- To output video signals to VIDEO, S VIDEO, or COMPONENT OUT jacks without text data, set DISPLAY OUTPUT switch to OFF, or press DATA CODE or SEARCH SELECT button on the remote commander.

Supplied Remote Commander


❶ EJECT button
❷ SEARCH SELECT buttons
❸ Buttons for playing at various speeds
❹ PAUSE button
❺ REW button
❻ PLAY button
⓬ ⏻ switch
⓫ DATA CODE button
❿ INDEX WRITE button
❾ REC buttons
❽ STOP button
❼ FF button
▲ EJECT
DATA CODE
SEARCH SELECT
INDEX WRITE
×1/10
×1/3
×1
×2
FRAME
PAUSE
●REC
REW
PLAY
FF
STOP
SONY

❶ EJECT button

❷ SEARCH SELECT buttons

Press these buttons to search for scenes using the search function.

For details on the search function, see "Searching using the search function" on page 38.

❸ Buttons for playing at various speeds

You can play back a tape at normal speed or at a speed other than normal with these buttons.

For details, see "Playing at various speeds" on page 37.

❹ PAUSE button

❺ REW (rewind) button

❻ PLAY button

❼ FF (fast forward) button

❽ STOP button

❾ REC (record) buttons

When you press both these buttons at the same time, REC indicator and PLAY indicator on the front panel light and recording begins.

❿ INDEX WRITE button

Press this button during recording to mark an index.

For details on an index, see "Marking an index" on page 47.

⓫ DATA CODE button

Press this button to display the data codes (recording date/time, camera data).

For details on data codes, see "Displaying information (data codes) recorded on a tape" on page 36.

⓬ ⏻ (on/standby) switch

(Continued)

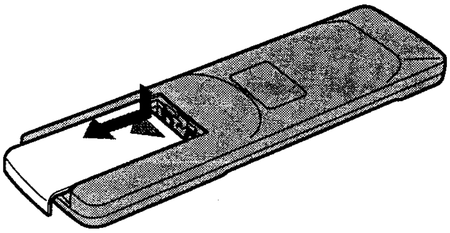
Location and Function of Parts

Notes

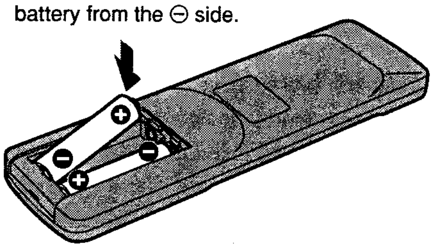
- The command mode of the supplied Remote Commander is set to VTR4. You cannot change command mode setting.
- Set [COMMANDER] in [OTHERS] menu to [WIRELESS] to enable Remote Commander to control the unit.
- In addition to Remote Commander supplied with the unit, the unit accepts signals from any Sony Remote Commander whose command mode is set to VTR4. To disable the control from Remote Commander, set [COMMANDER] in [OTHERS] menu to [CONTROL S].

Battery installation

1 Push and slide the lid to open.

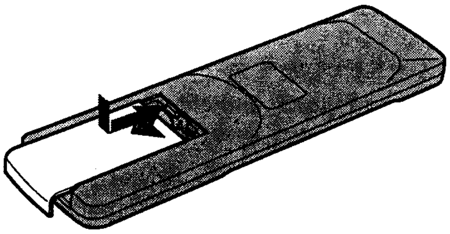


2 Install two size AA (R6) batteries (supplied) with the correct polarity.



Be sure to install the battery from the ⊖ side.

3 Put the lid back.



Notes on batteries

- Make sure that the battery orientation is correct when inserting batteries.
- Do not mix an old battery with a new one, or mix different types of batteries.
- If you do not intend to use Remote Commander for a long time, remove the batteries to avoid damage from battery leakage. If the batteries have leaked, remove them, wipe the battery compartment dry and replace the batteries with new ones.

To remove the batteries

Remove the lid as step **1** and take out the batteries.

WARNING

Battery may explode or leak if mistreated. Do not recharge, disassemble or dispose of in fire.
Check the valid date (month-year) displayed on the batteries.

Displaying Various Data

The unit can display various superimposed text data on the built-in LCD monitor and also an external monitor connected to the unit.
To display text data on an external monitor, set DISPLAY OUTPUT switch to ALL or S VIDEO/ VIDEO. You can turn ON/OFF various text data display by pressing DISPLAY button.

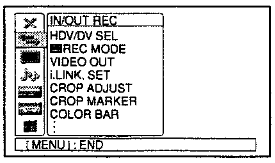
In this operation manual, the menu screen etc. is displayed in English. You can change the desired language with the screen language setting.
For details, see page 77.

Note

When images are output in 720p format, some of the text image data (outer frame: underscan portion) may appear cut out, depending on the displayable range of the monitor. In this case, check the text image data on LCD monitor of the unit or on a monitor using S VIDEO OUT jack or VIIDEO OUT jack. Also, when your monitor has an underscan function, you can check all the text data on the monitor during the underscan.

Menu screen

Press MENU button to display the menu screen.
For details on the menu, see "Chapter 5 Adjusting and Setting Through Menus" on page 65.

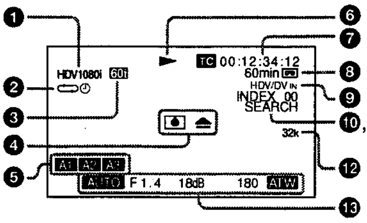


Data display screen

You can display the picture, picture and data, or picture and the time counter on the data screen by pressing DISPLAY button when the unit is turned on.

Data display

You can confirm important information for normal recording or playback, such as time code or remaining tape time, on the screen.



❶ Format indicator
[HDV1080i], [DVCAM], or [DV SP] are displayed.

❷ Repeat indicator
Displays an repeat indicator when TIMER switch is set to REPEAT. When [START TIME] of [CUSTOM REPEAT] is set to [ON] in [VTR SET] menu, ⏲ is also displayed *(page 10).*

❸ 60i/50i indicator

❹ Alarm indicator
Displays an alarm indicator.
For details on alarm indicators, see "Warning indicators and messages" on page 87.

❺ ASSIGN buttons indicator
Displays ASSIGN button indicator when each ASSIGN button is set other than default functions.
For details on "ASSIGN buttons", see page 77.

❻ Tape transport mode indicator
Displays the tape transport mode.

(Continued)

Displaying Various Data

⑦ Time counter (time code/user bits/count value of the counter) indicator

Displays the count value of the counter, time code, or user bits. By pressing the COUNTER SELECT button on the front panel, you can select the item to be displayed.
When the time code is displayed, TC appears to its left. In the drop frame mode, a period is displayed between the minutes and seconds (i.e., 00:12.58:00).
When the user bits are displayed, UB appears to their left.
When the count value of the counter is negative, "–" appears as the first digit (leftmost digit). When that value is positive, the first digit is blank.
The count value of the counter consists of seven digits.
If the self-diagnostic function is enabled, diagnostics code numbers are displayed.

Note

When you playback a tape without a time code or with a time code recorded in different formats, the time code cannot be displayed correctly.

⑧ Remaining tape time indicator

Displays the remaining tape time.
For details, see "REMAINING" on page 72.

Note

When you insert a cassette in which the tape has been rewound to the beginning, this indicator does not show the remaining tape time. The remaining tape time is displayed after the tape runs for a while.

⑨ INPUT SELECT indicator

Changes according to the position of INPUT SELECT switch. ([HDV/DV IN], [S VIDEO IN] or [VIDEO IN])

⑩ ◨ (Index) indicator

Displays ◨ when an index has been marked.

⑪ Search indicator

Displays the search mode when you search for scenes using Remote Commander.
For details on the search function, see "Searching using the search function" on page 38.

⑫ Audio mode indicator

In the recording mode, displays 32k when you select [FS32K] for [AUDIO MODE] in [AUDIO SET] menu. When you select [FS48K], 48k is displayed. During playback or audio dubbing, displays the audio mode recorded on the tape. During i.LINK input, displays the audio mode of the signal input to i HDV/DV jack.

Notes

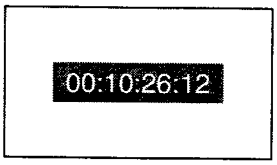
- The audio mode will not be displayed when [HDV/DV SEL] in [IN/OUT REC] menu is set to [HDV].
- Signals other than HDV/DVCAM lock mode will become non-standard audio and NS32k/NS48k is displayed during playback or when the signal is input from i HDV/DV jack.

⑬ Date/time and camera data indicator

When you press DATA CODE button of Remote Commander or set [DATA CODE] in [DISPLAY SET] menu to [DATE] or [CAMERA DATA], you can switch the display between recording date/time and camera data.
For details on the date/time and camera data indicator, see "Displaying information (data codes) recorded on a tape" on page 36.

Time counter screen

To display the time counter on LCD panel, press DISPLAY button. On the time counter screen, it displays the time data (count value of the counter/time code/user bits).
While the time counter is displayed, the position of the time counter moves up and down by pressing ⇧/⇩ buttons. When the small size time counter is displayed, the position of the time counter moves not only to the up and down, but also to the left and right by pressing ⇦/⇨ buttons.



When the count value of the counter is negative, "–" appears as the first digit (leftmost digit). When that value is positive, the first digit is blank. When the format of the displayed time code is the drop frame mode, the drop frame indicator is displayed as a period between the minutes and seconds (i.e., 00:12.58:00).
When user bits are displayed, the space between hour, minute, and second becomes blanked.

Notes

- In the playback mode, if the tape has a portion where recorded signals are not continuous:
  - The count value of the counter may not advance correctly from that portion.
  - The displayed value of the time code or user bits may be temporarily inaccurate.
- When the unit plays back a part of the tape where the recorded system has been changed between 50i and 60i, the displayed value may be inaccurate.
- When the unit plays back a part of the tape where the recording format has been changed among HDV, DVCAM and DV, the displayed value may be inaccurate.
- The counter operates on a ±12-hour cycle. You cannot make the counter operate on a 24-hour cycle.
- The count value of the counter consists of seven digits. The tens place of the "hour" is not displayed. (i.e., If the actual count value is "11:22:11:22", the displayed value will be "1:22:11:22.") However, the unit recognizes that the hours value is "11".

Setting the time counter

You can adjust the settings of the time counter display in [COUNTER SET] in [DISPLAY SET] menu.

DISPLAY : Selects whether to display the time counter or not.

SIZE : Selects the size of the time counter.

COLOR : Selects the color of the time counter.

For details on [COUNTER SET], see page 71.

STATUS CHECK screen

To display STATUS CHECK screen, press STATUS CHECK button.
Each time you press ⇧/⇩ button, STATUS CHECK screen switches in the order of AUDIO, OUTPUT, ASSIGN, and CUSTOM REPEAT.
To hide STATUS CHECK screen, press STATUS CHECK button again.

Audio Level Meter and Audio setting screen

Audio Level Meter and Audio setting screen is displayed when STATUS CHECK screen is set to [AUDIO].
This screen displays the audio level meter and the setting values of [AUDIO MONI] in [AUDIO SET] menu.
For details, see "AUDIO SET" on page 73.

Audio Level Meter

Audio Level Meter can be used to confirm and adjust the audio level. Audio Level Meter is displayed in different patterns, depending on the settings of [AUDIO MODE] and AUDIO OUTPUT switch.

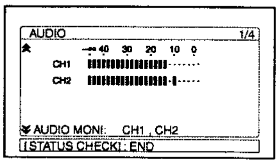
The unit detects the audio mode as follows:

In the playback mode: Detects the audio mode recorded on the tape.

In the recording/EE mode: Detects the selected audio mode in [AUDIO MODE] in [AUDIO SET] menu.

When INPUT SELECT switch is set to HDV/DV and HDV or DV signals is being input: Detects the audio mode of the signals being input. (The setting of [AUDIO MODE] in [AUDIO SET] menu becomes invalid.)

Audio mode: 48 kHz (2-channel, 16 bits)

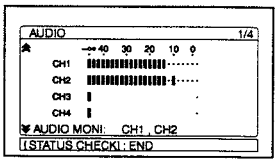


AUDIO MONI: CH1 , CH2
[STATUS CHECK] : END

(The levels of two channels, channels 1 and 2, are displayed.)

Audio mode: 32 kHz (4-channel, 12 bits)

(a) When AUDIO OUTPUT SELECT switch is set to CH-1/2 or CH-3/4

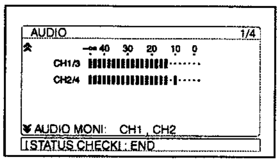


AUDIO MONI: CH1 , CH2
[STATUS CHECK] : END

(The levels of four channels, channels 1 to 4, are displayed. During playback, if the sounds are recorded onto channels 3 and 4, their levels meters fluctuate. However, during normal recording, you cannot record sounds onto the channels 3 and 4.)

(Continued)

(b) When AUDIO OUTPUT SELECT switch is set to MIX

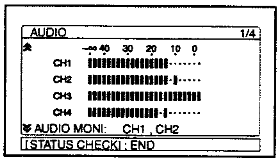


AUDIO MONI: CH1 , CH2

[STATUS CHECK] : END

(The mixed level of channels 1 and 3 is displayed on CH1/3; that of channels 2 and 4 is displayed on CH2/4. The audio output level becomes 50% (–6 dB) of the original audio levels.)

(c) When the unit is in the audio dubbing mode and AUDIO OUTPUT SELECT switch is set to CH-1/2 or CH-3/4



AUDIO MONI: CH1 , CH2

[STATUS CHECK] : END

(The levels of playback sound are displayed on CH1 and CH2. The levels of input sound to be dubbed are displayed on CH3 and CH4. When AUDIO OUTPUT SELECT switch is set to MIX, the mixed level of the pair of channels 1 and 3 and that of channels 2 and 4 is displayed. The audio output level becomes 50% (–6 dB) of the original audio levels on each channel. In this case, the meters are as illustrated in (b) on this page. To check only the sound to be dubbed before dubbing, press AUDIO DUB button while the unit is in the stop mode. The level meters fluctuate only when the channels (channel 3 and 4) are selected for audio dubbing.)

Note

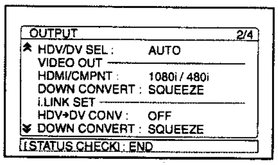
In EE, recording, or audio dubbing (only the channels used to dub) mode, if the input levels exceed 0 dB, the portions of the meters turn red. (However, when the audio mode is set to 32 kHz (4-channel,12 bits), whereas AUDIO OUPUT SELECT switch is set to MIX, the mixed audio levels that exceed 0 dB do not turn red.) During playback or while HDV/DV signals are input, the levels meters do not turn red.

OUTPUT screen

OUPUT screen is displayed when STATUS CHECK is set to [OUTPUT].

You can confirm the setting values of [HDV/DV SEL] in [IN/OUT REC] menu, [HDMI/CMPNT] and [DOWN CONVERT] of [VIDEO OUT], and [HDV → DV CONV] and [DOWN CONVERT] of [i.LINK SET] in [IN/OUT REC] menu.

For details on OUTPUT settings, see "IN/OUT REC" menu on page 67.



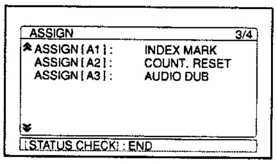
HDV/DV SEL : AUTO
VIDEO OUT
HDMI/CMPNT : 1080i / 480i
DOWN CONVERT : SQUEEZE
i.LINK SET
HDV→DV CONV : OFF
DOWN CONVERT : SQUEEZE
[STATUS CHECK] : END

ASSIGN screen

ASSIGN screen is displayed when STATUS CHECK is set to ASSIGN.

You can confirm the setting values of [ASSIGN BTN] in [OTHERS] menu.

For details on ASSIGN buttons, see "ASSIGN BTN" on page 77.

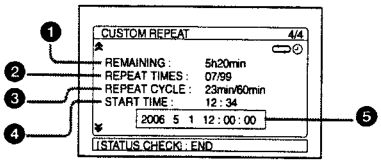


ASSIGN [A1] : INDEX MARK
ASSIGN [A2] : COUNT. RESET
ASSIGN [A3] : AUDIO DUB
[STATUS CHECK] : END

CUSTOM REPEAT screen

CUSTOM REPEAT screen is displayed when STATUS CHEK screen is set to [CUSTOM REPEAT].

The settings of [CUSTOM REPEAT] in [VTR SET] menu are displayed. While CUSTOM REPEAT is in progress, you can also confirm the current status of CUSTOM REPEAT.



REMAINING : 5h20min
REPEAT TIMES : 07/99
REPEAT CYCLE : 23min/60min
START TIME : 12 : 34
2006 5 1 12 : 00 : 00
[STATUS CHECK] : END

❶ **REMAININNG :** displays the estimated remaining time of CUSTOM REPEAT.

❷ **REPEAT TIMES :** displays the times that tape has played, and the total repeat times you have set in [REPEAT TIMES].

❸ **REPEAT CYCLE :** displays the playback time and the interval time of the tape which you have set in [REPEAT CYCLE].

❹ **START TIME :** displays the time CUSTOM REPEAT starts which you have set in [START TIME].

❺ **Date and time :** displays the date and time set by [CLOCK SET] in [OTHERS] menu is displayed, when [START TIME] is set to [ON].

Note

Items that have not been set up are displayed as [OFF].
For details on CUSTOM REPEAT, see "CUSTOM REPEAT" menu on page 74.

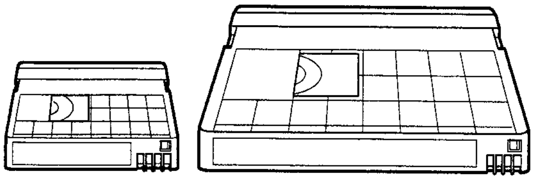
Chapter 2

Playback and Recording

Notes on Power Supply and Video Cassettes

Usable cassettes

We recommend you to use a DigitalMaster™ cassette of standard HDV/DVCAM/DV cassette (such as PHDV-276DM), or mini HDV/DVCAM/DV cassette (PHDVM-63DM) for recording in HDV/DV format. We recommend you to use a standard DVCAM cassette, Mini-DVCAM cassette, or DigitalMaster™ shown above for recording in DVCAM format.

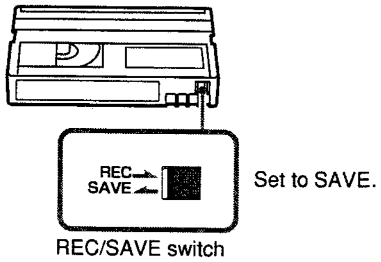


Cassette memory

Some mini cassettes and standard cassettes have the cassette memory (CI'I mark). The unit, however, does not support cassette memory.
However, if you use the DSR-25/45/50 as a recorder, the unit accesses cassette memory only if the recorder is set to [AUTO 📼 CI'I].

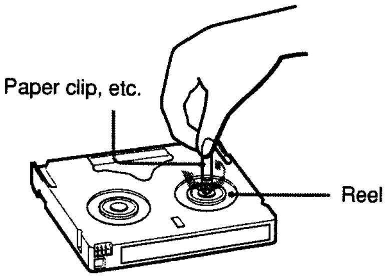
To save a recording

To prevent accidental erasure of a recording, set REC/SAVE switch on the cassette to SAVE. To record or dub audio on a tape, set the switch to REC.



Checking the tape for slack

Using a paper clip or a similar object, turn the reel gently in the direction shown by the arrow. If the reel does not move, there is no slack.



Preparing the Power Supply

Connect the power cord (supplied) to the AC IN connector. Then, connect the power plug to the wall outlet.
When you disconnect from the wall outlet, be sure to unplug the power plug from the wall outlet first.
[CLOCK SET] screen appears when you turn on the unit for the first time.
For details on [CLOCK SET], see page 78.

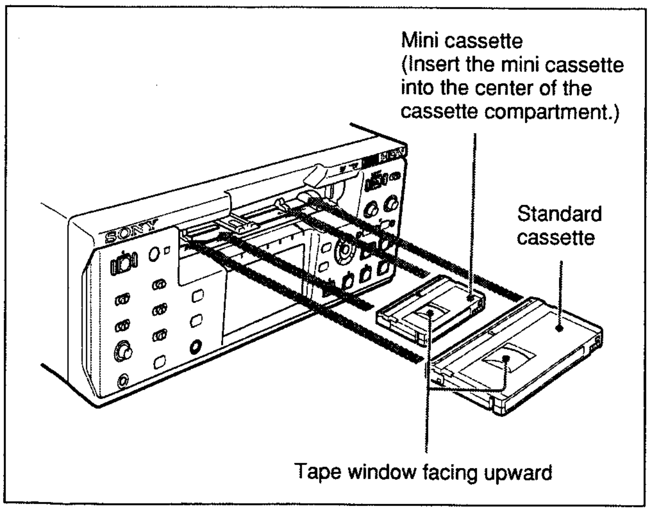
Inserting/Ejecting Cassettes

To insert a cassette

Notes

- Do not insert the cassette forcibly. The unit may be damaged.
- Do not eject/load the cassette in a place subject to light. The internal sensor of the unit may operate incorrectly if too much light falls on the unit.

After checking the tape for slack, hold the cassette so that the tape window is facing upward, then insert it into the unit.

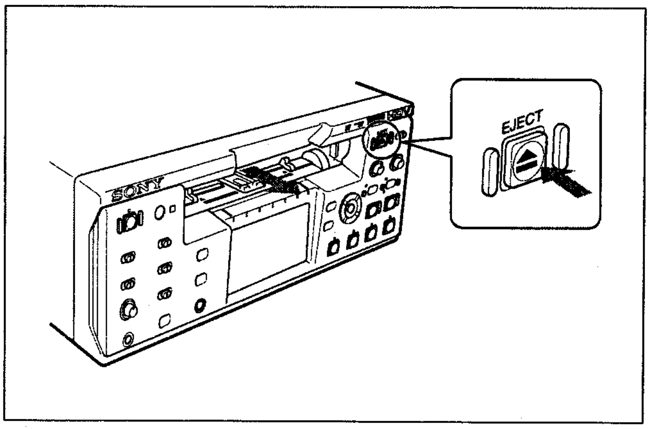

Mini cassette
(Insert the mini cassette into the center of the cassette compartment.)
Standard cassette
Tape window facing upward
SONY

Notes

- When inserting a cassette, hold the back edge of the cassette in the center and push it until the cassette is inserted deep into the unit. If you hold the ends, the cassette may not be loaded properly.
- If the cassette does not load or is loaded only halfway, eject it once, then insert it again. In such a case, if you insert the cassette forcibly, the cassette may not be loaded properly or malfunctions may occur.
- It takes a few seconds for the unit to recognize the cassette and find the proper location on the tape being loaded.

To eject the cassette

With the unit powered on, press EJECT button.



The cassette is unloaded and ejected.

Notes on Playback/Recording

No compensation for contents of the recording

Contents of the recording cannot be compensated for if recording or playback is not successful due to a malfunction of the unit, video tape, etc.

Copyright precautions

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the copyright laws.

(Continued)

Notes on Power Supply and Video Cassettes

On recording

You cannot record or output EE signals and any software having copyright protection signals on the unit. If you start recording protected video and audio signals, a warning appears on the monitor screen and the unit stops recording.
During recording, do not change INPUT SELECT switch setting. If you do so, the unit may mistakenly recognize that copyright control signals has been input.

On playback

When you play back software having copyright protected signals on the unit, you may not record or output to other equipment.

Limitations caused by differences in format

The unit can record and play back tapes recorded in HDV (1080/60i, 1080/50i) or DVCAM format. It can also record and play back tapes recorded in DV format (SP mode).
However, due to differences in format, you may not play back or edit some tapes affected by recording conditions of the tape (i.e., a tape originally recorded in DV format is dubbed in DVCAM format).
The unit cannot input/output, record, or play back a tape other than 1080/60i or 1080/50i format such as 1080/30F, 1080/25F, 1080/24F, 720/25p, 720/24p format.
The unit cannot input/output, record, or play back a tape with 4-channel audio signals in HDV extended format.
You can play back HDV720/30p format, whereas you cannot output the video signals from i HDV/DV jack.
For details, see "Compatibility of HDV, DVCAM, and DV Formats" on page 93.

If a tape has both a portion recorded in HDV/DVCAM format and one recorded in DV format (SP mode), the following limitations are applied when you play back the tape with the unit:

- The image may be distorted and noise may occur at the point where the recording format changes on the tape.
- The tape transport control buttons may be disabled until the tape speed is stabilized.

Note on playback on other equipment

A tape recorded in HDV format with the unit cannot be played back with the devices not compatible with HDV1080i format. We recommend confirming the contents of the tape by playing back the tape with the unit before playing back it on another video equipment.

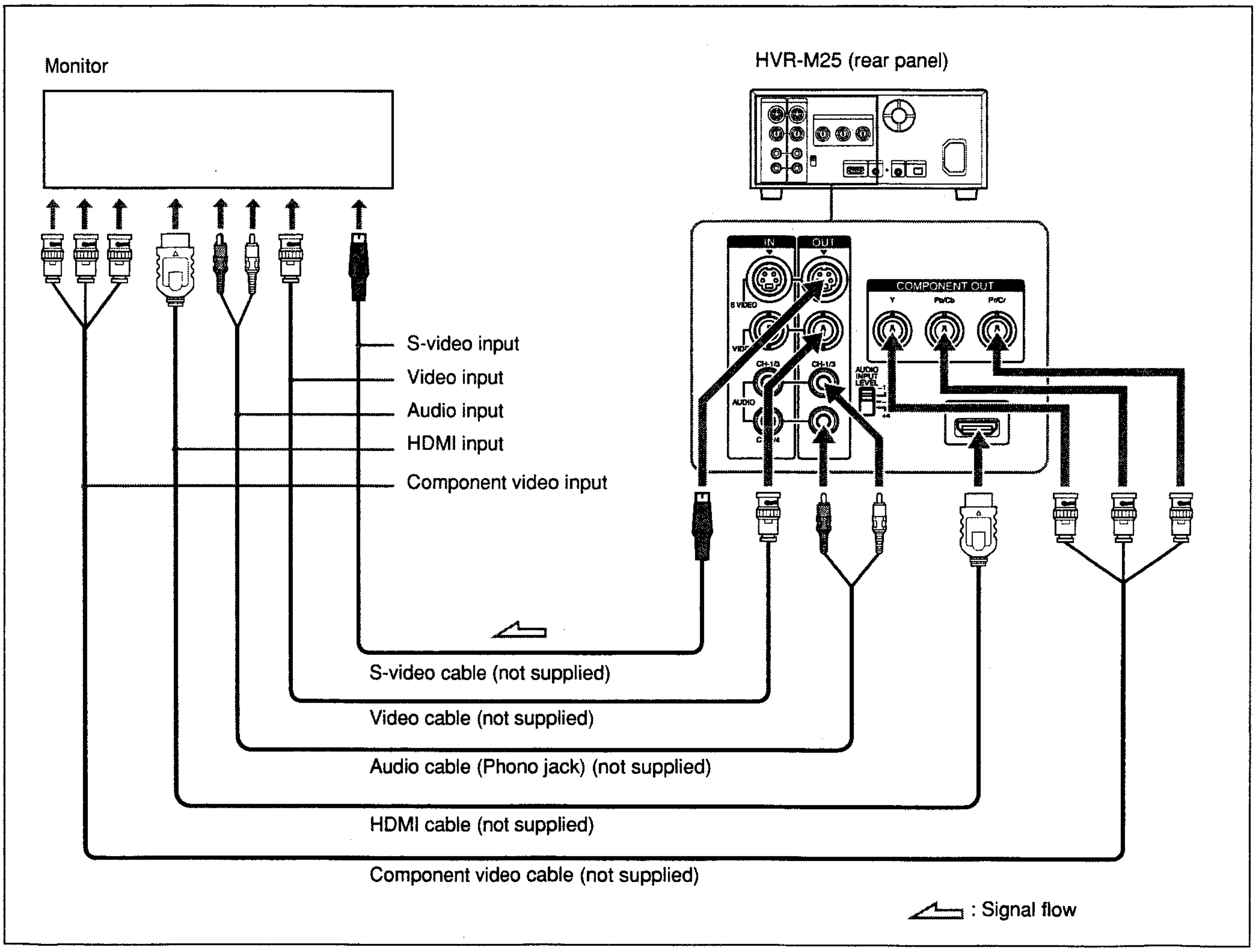
Playback

This section describes the connections and settings for the playback and functions such as playback at various speeds and searching for a specific scene on a recorded tape.

Connections for Playback

Connecting the unit to a monitor without an i.LINK jack

You can connect the unit to video monitor without an i.LINK jack. Use the unit as follows.


Monitor
HVR-M25 (rear panel)
IN
OUT
S VIDEO
CH-1/3
AUDIO
AUDIO INPUT LEVEL
COMPONENT OUT
Y
Pb/Cb
Pr/Cr
S-video input
Video input
Audio input
HDMI input
Component video input
S-video cable (not supplied)
Video cable (not supplied)
Audio cable (Phono jack) (not supplied)
HDMI cable (not supplied)
Component video cable (not supplied)
: Signal flow

When an HDMI cable is used for connection, Audio cable connection is not necessary.

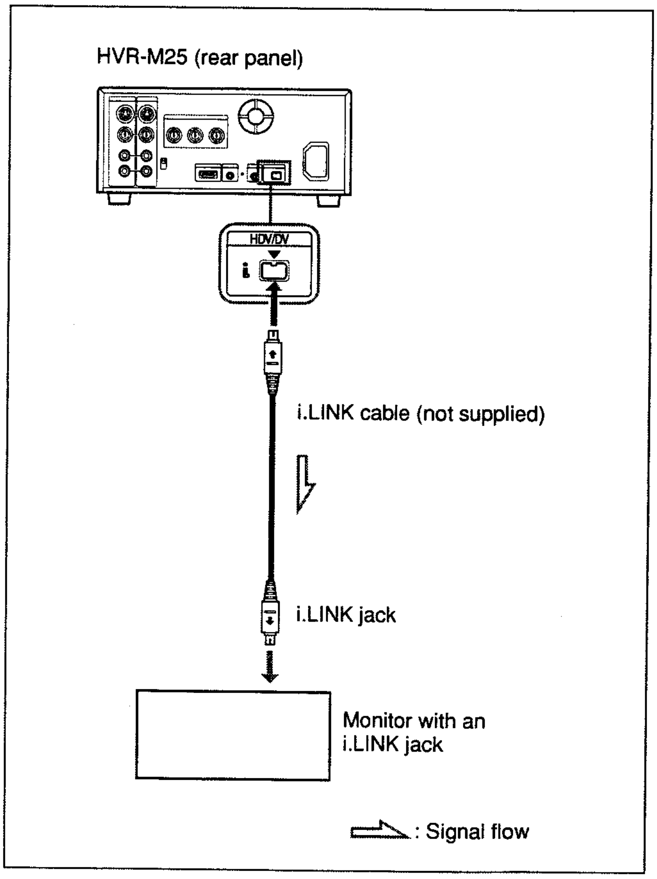
(Continued)

Notes

- To playback the picture recorded in HDV format when you connect the monitor using an HDMI cable or a component video cable, set [HDMI/CMPNT] of [VIDEO OUT] in [IN/OUT REC] menu according to your monitor *(page 68)*. When the picture recorded in DVCAM/DV format is played back, only a picture with a quality equivalent with DVCAM/DV format of 480i (NTSC) or 576i (PAL) is output via COMPONENT OUT jacks regardless of [HDMI/CMPNT] setting.
- For details on output level from HDMI OUT jack and COMPONENT OUT jacks, see "Specifications" *(page 100)*.
- To change the output level from COMPONENT OUT jacks, see [480i LEVEL] in [IN/OUT REC] menu *(page 71)*.
- There are some restrictions on pictures output from HDMI OUT jack and COMPONENT OUT jacks of the unit.
  Refer to HDMI OUT jack ❻, COMPONENT OUT jacks ❺ in "Rear Panel" of the "Location and Function of Parts" on page 19.
- If you connect the input connectors of the unit to the output connectors of a monitor, a humming noise may be generated or the image may be distorted. If these phenomena occur, use INPUT SELECT switch to select a signal that is not being input or disconnect the cables.
- When you play back a tape with copyright protected signals or input HDV signals with copyright protection to i HDV/DV jack, pictures and audio are not output via HDMI OUT jack.
- When you play back an HDV-formatted tape with copyright protected signals or input i.LINK signals with copyright protection to i HDV/DV jack, pictures may be output in either 480i (NTSC) or 576i (PAL) format regardless of the setting of [HDMI/CMPNT] of [VIDEO OUT] in [IN/OUT REC] menu.
- The unit cannot up convert DVCAM/DV recordings to HDV at output.

Connecting the unit to a monitor equipped with an i.LINK jack

The video and audio signals are sent with hardly any degradation, enabling high-quality playback to a monitor with an i.LINK connector which supports HDV, DVCAM, and DV format.



Notes

- Be sure that you set [HDV/DV SEL] in [IN/OUT REC] menu to [AUTO] (default setting) before connecting the monitor to the unit with the i.LINK cable. If you change the setting after connecting the i.LINK cable, the monitor may not recognize the video signals correctly *(page 67)*.
- To connect the unit to a monitor equipped with an i.LINK jack, you may need to set the monitor so that it recognizes the unit.
  For details, refer to your monitor's instruction manual.
- When i.LINK is connected, the unit cannot output video or audio only.

- If you connect the input connectors of the unit to the output connectors of a monitor, a humming noise may be generated or the image may be distorted. If these phenomena occur, use INPUT SELECT switch to select signals that is not being input or disconnect the cables.
- To connect the i.LINK cable between a monitor and the unit, use an HDV or DV-compatible monitor. To play back a tape recorded in the HDV mode on a DV-compatible monitor, set [HDV → DV CONV] of [i.LINK SET] in [IN/OUT REC] menu to [DVCAM] or [DV SP] before connecting the unit with the i.LINK cable.
  For details, refer to your monitor's instruction manual.
- Some general consumer television sets are provided with a function to control equipment connected with the i.LINK cable. Such a function, however, may not work with the unit.

Settings for Playback

Preparation on the unit

Notes

- Text information is superimposed to VIDEO OUT jack, S VIDEO OUT jack, COMPONENT OUT jacks, and HDMI OUT jack. To output video signals without text data, set DISPLAY OUTPUT switch to OFF.
  For details on DISPLAY OUTPUT switch, see page 11.
  For details on text data, see "Displaying Various Data" on page 25.
- To view a tape recorded in HDV format by connecting the unit to a monitor set that has a 4:3 aspect ratio, set [DOWN CONVERT] of [VIDEO OUT] in [IN/OUT REC] menu to the desired mode *(page 68)*.

1 Power on the monitor, then set the monitor's input switch according to the signals input.

2 Turn the unit on.

Playback Procedures

1 Insert a cassette and confirm that ▭ (cassette) indicator lights.

2 Press PLAY button on the unit.

The unit starts playback.

To stop playback

Press STOP button on the unit.

To pause playback

Press PAUSE button on the unit.

Notes

- If the unit is playing a portion of a tape where the recording format changes between HDV, DVCAM, and DV, the picture and sound are distorted on such portions.
- You cannot play back an image recorded in DV (LP) mode on the unit.
- If the unit is playing a tape recorded with mixed video signals of the 60i system and 50i system, the picture and sound will be distorted on a portion of a tape where the recording system changes.
- During pause, the picture recorded on a tape in HDV format cannot be output from i HDV/DV jack.

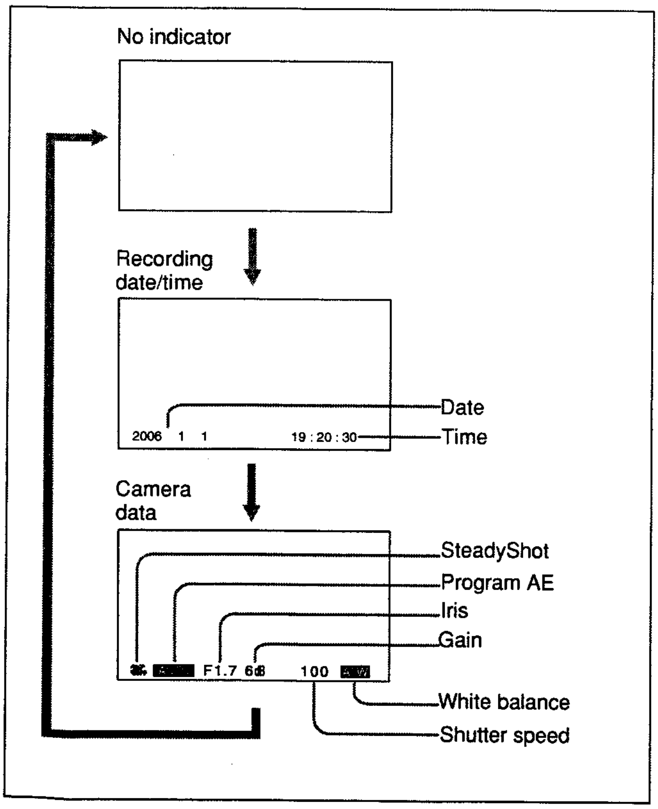
Playback Functions

This section describes useful functions during playback.

Displaying information (data codes) recorded on a tape

If you record on a tape using a Sony digital HD video camera recorder or digital camcorder, the recording information (data codes) is recorded on the tape.
The data codes consist of recording date/time and camera data (the shutter speed, SteadyShot, iris, white balance, program AE mode, gain, date and time).
You can check these data items during playback on the unit.

Each time you press DATA CODE button on Remote Commander, the display changes in sequence as follows:
no data code → recording date/time → camera data → no data code ..... Also, you can change the display by setting [DATE] or [CAMERA DATA] of [DATA CODE] in [DISPLAY SET] menu.
For details, see "DATA CODE" on page 72.


No indicator
Recording date/time
2006 1 1
19:20:30
Date
Time
Camera data
F1.7 6dB
100
SteadyShot
Program AE
Iris
Gain
White balance
Shutter speed

Notes

- If data codes were not recorded, "- - -" appears instead.
- The unit cannot record camera data.
- Some of the camera data items displayed by the unit are different from those shown on the digital camcorder and digital HD video camera recorder.

Playing at various speeds

You can playback a tape at various speeds using Remote Commander.

HDV-formatted tape

Button	Operation speed	Panel/analog output		i.LINK output	
		Forward direction	Reverse direction	Forward direction	Reverse direction
× 1/10	One-tenth of normal speed	◎	—*	—	—*
× 1/3	One-fifth of normal speed	◎	—*	—	—*
× 1	Playback at normal speed	◎	○	◎	○
× 2	Playback at normal speed	—*	—*	—*	—*
FRAME ◀II/II▶	Frame-by-frame forward scanning	◎	—*	—	—*
⏪/⏩	8× speed	○	○	○	○

* The output will be the same as that of ×1.
◎ : Play at normal speed.
○ : A search simple image is output. (Rough image)
— : No playback takes place.

DVCAM/DV-formatted tape

Playback options	Operation
Play at 1/10 of normal speed	Press × 1/10 button during playback.
Play at 1/3 of normal speed	Press × 1/3 button during playback.
Play at normal speed	Press × 1 button during playback.
Play at twice the normal speed	Press × 2 button during playback.
Play frame by frame	Press FRAME ◀II/II▶ buttons during pause. If you keep pressing one of these buttons, playback continues, frame by frame.
Fast forward the tape while monitoring pictures	Press ⏩ button during normal playback or when playing at various speeds.
Rewind the tape while monitoring pictures	Press ⏪ button during normal playback or when playing at various speeds.

To change playback direction

Press FRAME ◀II/II▶ buttons during normal playback or when playing at various speeds. To play back in the forward direction, press II▶ button; in the backward direction, press ◀II button.

Notes

- When the command mode of a Sony device/remote commander is set to VTR4:
  - if you press ×1/3 button on the supplied Remote Commander while pointing it toward a Sony device other than the unit, the playback speed may turn to 1/5 of normal speed.
  - when you playback a tape in DVCAM/DV format and press ×1/5 button on Remote Commander while pointing it toward the unit, the playback speed turns to 1/3 of normal speed.
- If the unit keeps playing at 1/10 of normal speed in forward or reverse for more than 1 minute, the unit begins to play back at normal speed.

To hear the sound while playing at various speeds

To hear the sound when playing at various speeds, set [JOG AUDIO] in [AUDIO SET] menu to [ON].
For details on [AUDIO SET] menu, see "AUDIO SET" menu on page 73.

Note

You cannot hear the sound while playing back a tape recorded in HDV format at various speeds.

Searching using the search function

The unit can immediately access the following signals recorded on a tape.

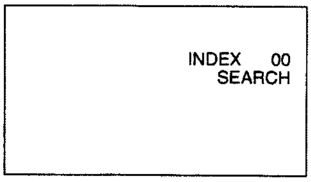
- Searching for the beginnings of the recordings: Index search
- Searching for a point on the tape where the recorded date changes: Date search

To search for scenes, use the supplied Remote Commander. Also, you can assign the same search function to ASSIGN buttons.
For details on ASSIGN buttons, see "ASSIGN BTN" in "OTHERS" menu on page 77.

1 Press SEARCH SELECT button on Remote Commander to select the search type.

The search type changes in the order of Index search → Date search → (No indication).

When selecting INDEX SEARCH



(The search screens are displayed only on Data display screen.)

2 Press ⏮ / ⏭ button repeatedly to locate the scene you want.

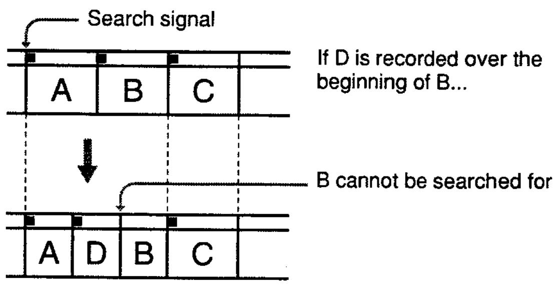
Each time you press ⏮ / ⏭ button, the unit searches for the previous or next search point. When a search point is located, its number is indicated on the monitor screen.
The unit starts searching backwards or forwards until the number comes to zero, then plays back the scene.

How signals are recorded

There are four different signal types, one for each search method; index, title, date and photo signals. The unit can record either index signals or date signals only on a tape.

Notes

- If you record another program over the beginning of the search signals, you cannot locate the original program.



- The interval of a date or index must be 2 minutes or more. If the interval is short, the search signals may not be detected correctly.
- If non-recorded portions are included in the middle of a tape, signal search may not be performed correctly.
- You cannot add search signals after recording.
- The unit does not support searching, reading or writing of data on cassette memory. For duplicating with the DSR-25/45/50, see page 30.
- Searching may not be done correctly if the tapes were not recorded on Sony-brand digital video equipment.

AUTO REPEAT (CUSTOM REPEAT)

The unit can repeat playback of all or a part of a tape. When the following items on the tape are searched, AUTO REPEAT playback starts automatically.

- Index signals
- A portion unrecorded
- A portion recorded in the format set by other than [AUTO] in [HDV/DV SEL] in [IN/OUT REC] menu
- Tape end

By setting up [CUSTOM REPEAT] in [VTR SET] menu, you can customize the repeat times, the repeat cycle, and the start time of repeat playbacks.

To set the CUSTOM REPEAT

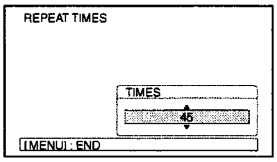
Set the following sub menus of [CUSTOM REPEAT] in [VTR SET] menu.

REPEAT TIMES

ON/OFF : Selects either to enable or to disable REPEAT TIMES setting.

TIMES : Sets the number of times to repeat playback.

Repeat times can be set from 1 to 99 times.
Set the number of repeat times by pressing ⇧/⇩ buttons on the unit.



REPEAT TIMES

TIMES 45

[MENU] : END

Press EXEC button to complete.

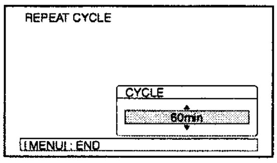
REPEAT CYCLE

ON/OFF : Selects either enable or disable the REPEAT CYCLE setting.

CYCLE: Sets the time of intervals for playback.

Time of repeat interval is equal with the total time of tape in playback, rewind, and stop.
Repeat intervals can be selected from 15 minutes to 300 minutes with 5 minutes increment.

Set the desired number by pressing ⇧/⇩ button on the unit.



REPEAT CYCLE

CYCLE 60min

[MENU] : END

Press EXEC button to complete.

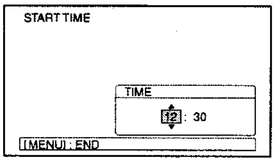
To play back at START TIME, rewind a tape beforehand. If the tape is not rewound, the unit rewinds the tape to its beginning at selected START TIME, then start playback.

START TIME

ON/OFF : Selects either enable or disable [START TIME].

TIME : Sets the start time of [CUSTOM REPEAT].

You can adjust the start time of [CUSTOM REPEAT].
Set the number of each hour and minute by pressing ⇧/⇩ button on the unit.
Press EXEC button after the hour is set, then adjust the minute.



START TIME

TIME 12 : 30

[MENU] : END

Press EXEC button to complete.

Note

While the unit is in STANDBY mode, even when START TIME setting is applied and the start time comes, the unit will not power on automatically.
For details on "CUSTOM REPEAT", see page 74.
Also, refer to "TIMER switch" (page 10), "STATUS CHECK screen" (page 27), and "CUSTOM REPEAT screen" (page 28).

Setting the AUTO REPEAT

If [START TIME] is set to [OFF]

1 Set TIMER switch to REPEAT.

🔁 is displayed on Data display screen *(page 25)*.

2 Press REW button. (If the tape is already rewound, press PLAY button.)

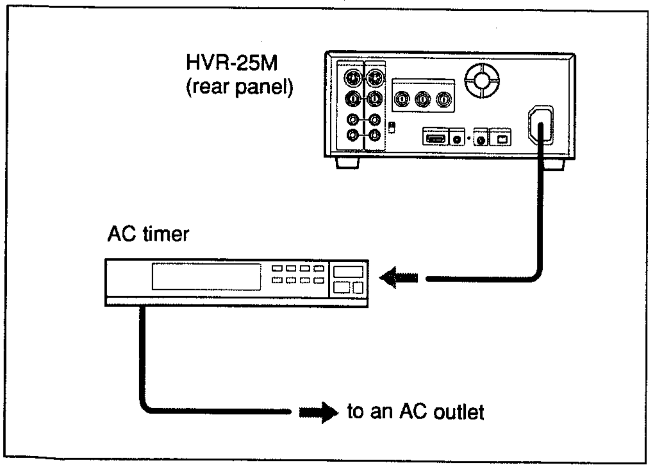
The unit rewinds the tape to its beginning and starts playback automatically.
When the following items on the tape are searched, AUTO REPEAT playback starts automatically.

- Index signals
- A portion unrecorded
- A portion recorded in the format set by other than [AUTO] in [HDV/DV SEL] in [IN/OUT REC] menu
- Tape end

When [REPEAT CYCLE] is set, the unit continues playback until a few minutes before the time reaches at the actual selected time, or the items listed above is detected on a tape. The tape is rewound to the beginning and restarts playback when the selected CYCLE time comes.
If you set [REPEAT TIMES], the unit repeats playback according to the times you have selected.

Auto Repeat using an external AC timer

1 Connect the unit to an external AC timer (not supplied).



2 Set the TIMER switch on the front panel of the unit to REPEAT.

3 Set the start time on the external AC timer.

At the preset time, the power of the unit turns on, and after a few to several ten seconds, AUTO REPEAT playback starts automatically. When the following items on the tape are searched, AUTO REPEAT playback starts automatically.

- Index signals
- A portion unrecorded
- A portion recorded in the format set by other than [AUTO] in [HDV/DV SEL] in [IN/OUT REC] menu
- Tape end

If [START TIME] is set to [ON]

Set TIMER switch to [REPEAT].
When the unit is powered on, the unit waits the repeat playback until the time you have set in [START TIME]. Also, when TIMER switch is set to REPEAT and the unit is powered on, auto playback is set to standby until the start time begins.

Notes

- 🔁🕘 is displayed on Data display screen. When the tape on the unit is not in the playback mode, such as during recording or when no tape is inserted, 🔁⊘ is displayed. When the start time reaches the selected time during this time, auto playback is not operated until the next starts time begins.
- To operate AUTO REPEAT automatically, the tape should be stopped before the start time begins.
- When [START TIME] for [CUSTOM REPEAT] is set, turn the unit on before the actual start time begins.

To stop the AUTO REPEAT while the unit is in progress

Press STOP button on the front panel.

When both [REPEAT TIMES] and [START TIME] are set, if you stop AUTO REPEAT, the unit waits for the START TIME to come, regardless of the REPEAT TIMES setting. When the start time comes, the value of REPEAT TIMES is initialized to zero, and repeat playback starts.

To cancel the AUTO REPEAT

Set TIMER switch to OFF.

By using AUTO REPEAT, you can do the following as examples

Repeat playbacks with 30 minutes interval :

1. Set [ON/OFF] of [REPEAT CYCLE] to [ON].
2. Set [CYCLE] of [REPEAT CYCLE] to [30 min].
3. Press REW or PLAY button.

Repeat playbacks 5 times for 2 hours per day at 9 a.m. :

1. Set [ON/OFF] of [REPEAT CYCLE] to [ON].
2. Set [CYCLE] of [REPEAT CYCLE] to [120 min].
3. Set [ON/OFF] of [REPEAT TIMES] to [ON].
4. Set [TIMES] of [REPEAT TIMES] to [5].
5. Set [ON/OFF] of [START TIME] to [ON].
6. Set [TIME] of [START TIME] at [9:00].
7. Turn the unit on before 9 a.m.

Notes

- The unit cannot detect signals for Index signal, a signal other than the one set by [AUTO] in [HDV/DV SEL], or an unrecorded portion within 20 seconds of the beginning of the playback.
- When you intend to turn the unit off, press STOP button on the unit to stop the tape transport operation beforehand. If you turn the unit off while a tape is running, for example, by using an AC timer, the unit or the tape may be damaged.
- The editing software used on the digital non-linear editing system may mark index signals on a tape itself. Therefore, if you use a tape on which signals transmitted from a digital non-linear editing controller are recorded or a copy tape made from one, using digital dubbing, Auto Repeat may not be performed correctly.

EDGE CROP MARKER

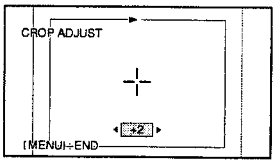
The unit allows you to adjust the edge crop position when you output the down converted HDV 16:9 wide screen pictures to 4:3 standard TV mode pictures. By displaying the edge crop marker on the monitor, you can check the crop position on LCD monitor beforehand.

To set EDGE CROP MARKER

Either set [CROP MARKER] in [IN/OUT REC] menu to [ON] after setting [DOWN CONVERT] of [VIDEO OUT] in [IN/OUT REC] menu to [EDGE CROP] or [DOWN CONVERT] of [i.LINK SET] in [IN/OUT REC] to [EDGE CROP].

EDGE CROP MARKER screen displays;

- Crop position of 4:3 aspect screen
- Center marker
- 80% safety zone



Select [CROP ADJUST] in [IN/OUT REC] menu and press EXEC button again after the confirmation display appears. Then, EDGE CROP MARKER will appear on the monitor. Press ⇦/⇨ buttons to move the marker to the left and right and adjust the position to crop. Press EXEC button to execute.

Notes

- When CROP MARKER is displayed on LCD monitor, the text data and crop marker displayed on LCD monitor are not output from jacks on the rear panel of the unit. To output 4:3 screen marker, see [MARKER BURN].
- To output an edge cropped picture by down converting the HDV-formatted picture to 4:3, see "VIDEO OUT" (*page 68*) and "i.LINK SET" (*page 69*) in "IN/OUT REC" menu.

MARKER BURN

The unit can output to each video jacks and display 4:3 screen marker on the 16:9 screen images. In case of making an editing tape from the original tape, [MARKER BURN] can be used.

To set up MARKER BURN

Set [MARKER BURN] in [DISPLAY SET] menu to [ON].

Notes

- MARKER BURN is effective under the following conditions.
  - While playing back a tape in HDV or an HDV signal is input via i HDV/DV jack, and [DOWN CONVERT] of [VIDEO OUT] in [IN/OUT REC] menu is set to [SQUEEZE] or [LETTER BOX].
  - When wide signals recorded in DVCAM or DV format are played back, or wide screen HDV/DVCAM/DV signals are input to each VIDEO jacks.
- When [DOWN CONVERT] of [VIDEO OUT] in [IN/OUT REC] is set to [EDGE CROP], the marker can not be displayed.
- The markers displayed with EDGE CROP and MARKER BURN show the available horizontal ratio range of the 4:3 screen to be cropped. The displayable image size of the standard 4:3 TV monitor may appear smaller than the size marked on the monitor of the unit.
- When the EDGE CROP MARKER and MARKER BURN are enabled at the same time, the EDGE CROP MARKER is displayed as priority.
- When you set [MARKER BURN] and [ALLSCAN MODE] in [DISPLAY SET] menu to [ON] at the same time, the marker will not appear in the correct position on LCD monitor. This is not a malfunction. The marker will be output correctly via each video jack.

Using the Unit as a Videocassette Recorder

This section describes the connections, settings and operations necessary to perform recording on the unit. The same settings and operations apply whether you are using the unit for dubbing.

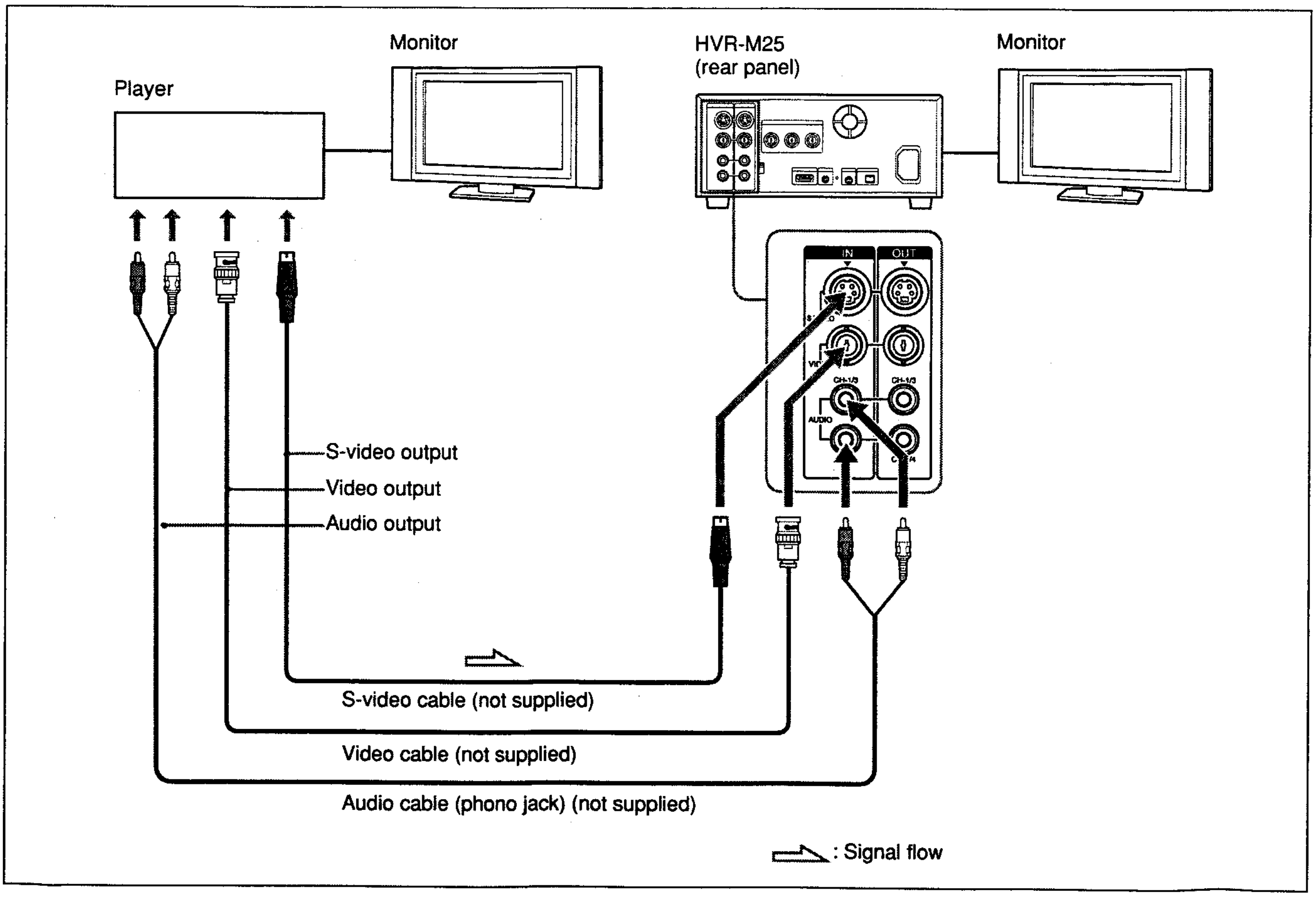
Notes

- For connection of the editing devices, refer to the instruction manual of the editing controller and that of the editing software you use.
- Edit functions are specified by the editing software. For details on the editing methods, refer to the instruction manual of the editing software.
  For details, see also page 62 and 63.

Connections for Recording

To video equipment without an i.LINK jack

You can connect the unit to video equipment without an i.LINK jack. Use the unit as a recorder as follows.


Player
Monitor
HVR-M25
(rear panel)
Monitor
IN
OUT
CH-1/3
AUDIO
S-video output
Video output
Audio output
S-video cable (not supplied)
Video cable (not supplied)
Audio cable (phono jack) (not supplied)
: Signal flow

Connect either an S-video cable or a video cable.

(Continued)

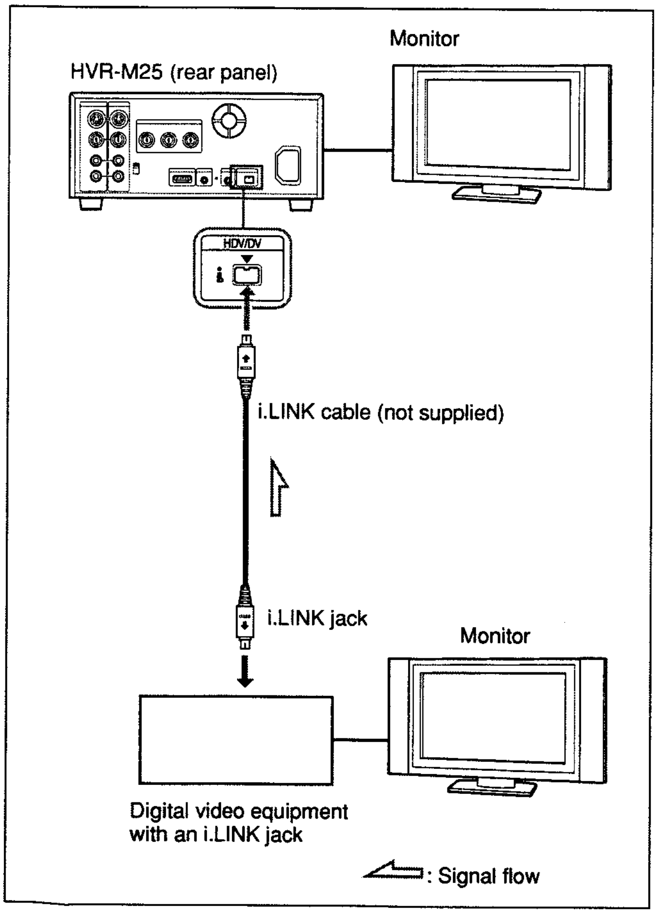
Using the Unit as a Videocassette Recorder

Notes

- If you connect the output connectors of the unit to the input connectors of the player, a humming noise may be generated or the image may be distorted. If these phenomena occur, set INPUT SELECT switch to a position where a signal is not currently being input, or disconnect the cables.
- Distorted signals (i.e., when played back at a speed other than normal) may not be recorded or may be distorted.
- When you connect only AUDIO IN jacks when HDV indicator is lit, no audio is input. You must connect VIDEO IN jack at the same time or set [HDV/DV SEL] in [IN/OUT REC] menu to [DV].

To digital video equipment with an i.LINK jack

When you record i.LINK signal of HDV (1080/60i, 1080/50i), DVCAM, or DV format, the video and audio signals are sent without any degradation in quality, enabling high-quality recording. The signal flow is automatically detected so you do not need to make separate connections for input and output.


Monitor
HVR-M25 (rear panel)
HDV/DV
i.LINK cable (not supplied)
i.LINK jack
Monitor
Digital video equipment with an i.LINK jack
: Signal flow

Notes

- When you record video from HDV-compatible equipment, set [HDV/DV SEL] in [IN/OUT REC] menu to [AUTO]. To record video from a DVCAM/DV equipment, set [HDV/DV SEL] in [IN/OUT REC] menu to [AUTO] or [DV] before connecting the i.LINK cable *(page 67)*. If you change the setting after connecting i.LINK cable, the video equipment may not recognize the video signals correctly.
- Copy-protected program such as digital broadcast can not be input via i HDV/DV jack.
- With HDV/DV connection, the sound is recorded in the same audio recording mode as that of the source tape. To record in a different audio recording mode from the source tape, connect as shown in "To video equipment without an i.LINK jack" on *page 43*.
- With HDV/DV connection, data codes (recording date/time, camera data) recorded on the source tape are transmitted to the recorder (the unit). As a result, when you play back a recorded tape on the unit and press DATA CODE button on the Remote Commander, the same data codes as those recorded on the source tape are displayed on the monitor screen.
- If no picture appears via i HDV/DV jack, disconnect the i.LINK cable, then reconnect it.
- The unit cannot record video or audio separately.
- If you record a picture in DVCAM/DV in the playback pause mode, the picture may be rough. When set to HDV, the picture is not recorded.
- When connecting a device that has a 6-pin i.LINK jack to the unit, first, connect the plug of the cable to the 6-pin i.LINK jack.
- If the unit is connected to a device equipped with a 6-pin i.LINK jack, when you intend to disconnect or reconnect the i.LINK cable, turn off the device and pull out the plug of its power cord from the AC outlet beforehand. If you connect or disconnect the i.LINK cable while the device is connected to the AC outlet, high-voltage current (8 to 40 V) is output from the i.LINK jack of the device to the unit, which may cause a malfunction.
- If you restart recording after a pause or stop, the images recorded before and after restarting operation will not be continuous.
- If you connect the output connectors of the unit to the input connectors of a player or that of a monitor, a humming noise may be generated or the image may be distorted. If these phenomena occur, use INPUT SELECT switch to select a signal that is not being input or disconnect the cables.

- The unit cannot record MPEG2 signals except HDV1080i signals.
- When you record HDV signals input from i HDV/DV jack, the connection between the recorded signals pause for a second.

Settings for Recording

Preparation on the recorder (the unit)

Notes

- Before recording, set the date and time on the unit so that the recording time can be written into the search signal. You can set the date and time by setting [CLOCK SET] in [OTHERS] menu. *(page 78)*
- Editing may not be possible with a signal that is copyright protected.
- During recording, the tape transport control buttons (except STOP and PAUSE) are disabled to prevent the tape running mode from being changed by an incorrect operation. To disable STOP and PAUSE buttons, set KEY INH switch to ON after the unit starts recording. In this case, set KEY INH switch to OFF first, then stop or pause the recording.

1 Turn the power on the monitor, then set the monitor's input according to the input signals.

2 Set up the player to play back a tape.
For details, refer to the instruction manual of the player.

3 Turn the unit on.

4 When the player is connected to IN jacks on the unit, set [60i/50i SEL] in [OTHERS] menu according to the input signals.

When you input 60i system signals, set [60i/50i SEL] to [60i]. When you input 50i system signals, set [60i/50i SEL] to [50i]. *(page 79)*

Notes

- Do not change [60i/50i SEL] setting during recording.
- When you select S VIDEO or VIDEO with INPUT SELECT switch, if the field frequency of the input signals is different from that of [60i/50i SEL] setting, the picture mutes.

(Continued)

Using the Unit as a Videocassette Recorder

- When the signals are input through the i.LINK interface, the unit detects the field frequency of the input signal automatically. You do not need to change [60i/50i SEL] setting. When [60i/50i SEL] is set to [50i], however, the time code generated by the unit is fixed to the non-drop frame mode. Even when 60i system signals are input to the i.LINK jack, the time code generated by the unit is the non-drop frame mode, regardless of [TC FORMAT] setting in [TC/UB SET] menu. To record in the drop frame mode, set [60i/50i SEL] to [60i].

5 Select input signals by switching INPUT SELECT switch on the unit.

HDV/DV: to record input signals from i HDV/DV jack
S VIDEO: to record input signals from S VIDEO IN jack
VIDEO: to record input signals from VIDEO IN jack

You need to adjust [HDV/DV SEL] (*page 67*) and [▣ REC MODE] (*page 67*) in [IN/OUT REC] menu to your desirable recording format.

For details on recording tape format, see page 97.

Note

Do not change INPUT SELECT switch setting during recording. If you change the setting of this switch during the recording, the recording will stop for several seconds. Recording will restart after the internal circuits are switched. During this time, no image is recorded.

6 Select the audio mode. (With an i HDV/DV connection, skip this step.)

When you select S VIDEO or VIDEO with INPUT SELECT switch, set the audio mode by setting [AUDIO MODE] in [AUDIO SET] menu (*page 73*).

FS32K: Switches the audio mode to 4-channel mode
FS48K: Switches the audio mode to 2-channel mode

When recording a tape in DV (SP), you can set [AUDIO LOCK] in [AUDIO SET] menu (*page 73*).

Note

When signals are input from i HDV/DV jack, the audio mode is the same as the one to input signals from the player.

To dub audio after recording, see page 60.

7 Set AUDIO INPUT LEVEL switch on the rear panel properly according to the audio level of the player.

8 Select the recording level adjustment mode using AUDIO INPUT switch.

Note

You cannot adjust the recording level if you record signals input via i HDV/DV jack.

9 If necessary, adjust the audio recording level by turning AUDIO REC LEVEL control knobs.

You can adjust the recording level with AUDIO REC LEVEL control knobs if you have selected MANU in step **8**. While looking at STATUS CHECK screen, turn AUDIO REC LEVEL control knobs to adjust the recording level. Adjust the audio recording level so that it does not exceed 0 dB when the audio signals are at its maximum. If the recording level exceeds 0 dB, the recorded sound will be distorted.
(When the audio mode is set to FS32K (4-channel mode), sound will be recorded on channel 1 and 2. To listen the audio during recording, set AUDIO OUTPUT SELECT switch to CH-1/2.)

Notes

- When the unit records in DVCAM (DV) format, it supports two audio modes, with either 2-channels at FS48K or 4-channels at FS32K. It is not possible to select other modes (for example with 2-channels at FS32K).
- During recording, you cannot change the audio mode.
- To dub audio after recording using the unit, set [AUDIO MODE] in [AUDIO SET] menu to [FS32K] (4-channel mode) before recording.
  For details on [AUDIO SET] menu, see "AUDIO SET" menu on page 73.
- The unit is able to dub audio on a tape recorded in DVCAM format with 4-channel (FS32k).

Recording Procedures

This section describes the procedures used to record signals sent from another VCR to the unit.
For details on the operation when the unit is connected to a computer via i *HDV/DV jack, refer to "Editing (Connecting with a Computer)" (page 62).*

1 Insert a cassette and confirm that 📼 (cassette) indicator lights up.

2 Press the playback button on the player.

The player starts playback.

3 On the unit, press PLAY button while holding REC button down.

Note

When the unit records HDV format images, it takes a while until recording starts. This delay, however, is not an error. ([STANDBY] on screen and REC indicator blinks until recording starts.)

To stop recording

Press STOP button on the unit.

To pause recording

Press PAUSE button on the unit.

Note

You cannot up convert NTSC or PAL signals in HDV format for recording.

Recording Functions

Marking an index

By pressing INDEX button on the unit or INDEX WRITE button on Remote Commander during recording, you can mark an index signal at any place on the tape. If you mark an index at the scene you want to search for, you can easily find the scene later.
When [AUTO INDEX] in [VTR SET] menu is set to [ON], if you start recording while the tape in stop, the unit automatically marks an index. While the index is being marked, ▣ indicator appears for about seven seconds on Data display screen *(page 25).*

Notes

- You cannot mark a new index while ▣ indicator is being displayed.
- If you record on a portion of the tape where an index has been marked, the index will be erased. You cannot delete just an index while keeping the image or sound.
- You cannot mark an index during playback or audio dubbing operations. INDEX button and INDEX WRITE button are disabled in these operations.

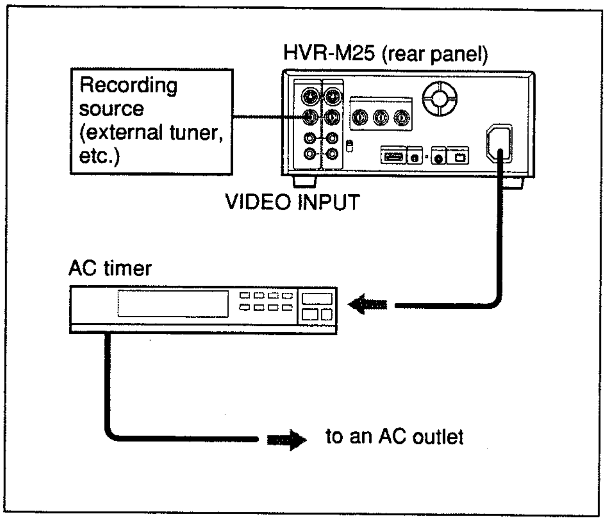
To use an index during playback

See "Searching using the search function" on page 38.

AC timer recording

By connecting the unit to an external AC timer (not supplied), you can start recording at a preset time.

1 Connect the unit to an external AC timer (not supplied).



2 Insert a tape for recording.

3 Set INPUT SELECT switch of the unit to select the input signals.

4 Set TIMER switch on the front panel of the unit to REC.

5 Set the timer-on time on the connected AC timer.

At the preset time, the power of the unit turns on automatically and recording starts after a few to several ten seconds. Set the timer allowing a margin for the recording to start. You do not need to press REC button.

Note

To turn the unit off, press STOP button on the unit to stop the tape transport operation beforehand.
If you turn the unit off while a tape is running, for example, by using an AC timer, the unit or the tape may be damaged.

If the tape ends before the recording source stops operation

The tape stops.

To stop recording during timer recording

Press STOP button on the unit.

To release the AC timer recording mode

Set TIMER switch on the front panel of the unit to OFF.

Chapter 3

Setting the Time Code

Setting the Time Code and User Bits

The unit can set, display, record and play back the time code and user bits.

Notes

- When HDV signals are recorded from i HDV/DV jack on the unit, user bits are copied automatically. However, these bits cannot be preset. The time code is set in accordance with [TC MAKE] setting. To copy the time code of a source tape, set [HDV/DV IN TC] in [TC/UB SET] menu to [EXTERNAL] *(page 76).*
- When images recorded in DVCAM/DV format are input via i HDV/DV jack, you can preset a user bit time code on the unit. To copy the user bit and time code of a source tape, use [DUPLICATE PLUS] *(page 74).*
- For a tape recorded both in HDV and DVCAM/DV formats, the time code may become garbled at a connecting portion between scenes on the tape.
- If you play back an HDV tape without signals recorded, the time cord may become disordered.
- The time code and user bits cannot be reset on the unit from with Remote Commander equipped with a counter reset function.

Using the Internal Time Code Generator

You can set the initial time code value generated by the internal time code generator. In addition, you can set the user bits to record data such as the date, time, scene number, reel number, or other useful information. The time data settings are set by using the menu.

For details on the menu, see "Chapter 5 Adjusting and Setting Through Menus" on page 65.

To set the initial time code value

This section describes how to set the time code's initial value.

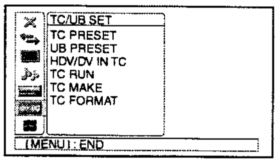
Note

To set the initial time code value, you need to set [TC MAKE] in [TC/UB SET] menu to [PRESET] beforehand.

For details on [TC MAKE], see "TC/UB SET" menu on page 76.

1 Press MENU button to display the menu.

For details on the menu, see "Operating the Menus" on page 65.

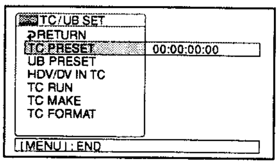


(You can set [TC FORMAT] only when [60i/50i SEL] in [OTHERS] menu is set to [60i].)

(Continued)

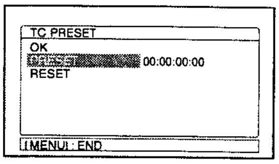
2 Press ⇧/⇩ buttons to select [TC/UB SET], then press EXEC button.

The following menus are displayed.


TC/UB SET
RETURN
TC PRESET
00:00:00:00
UB PRESET
HDV/DV IN TC
TC RUN
TC MAKE
TC FORMAT
[MENU]: END

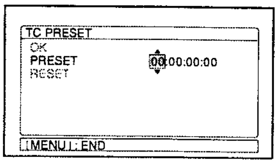
3 Press ⇧/⇩ buttons to select [TC PRESET], then press EXEC button.

The following menus are displayed.


TC PRESET
OK
PRESET
00:00:00:00
RESET
[MENU]: END

4 Press ⇧/⇩ buttons to select [PRESET], then press EXEC button.

The following menus are displayed.


TC PRESET
OK
PRESET
00:00:00:00
RESET
[MENU]: END

5 Set the first two digits. Press ⇧/⇩ buttons to select the number, then press EXEC button.

6 Repeat step **5** to set the other eight digits.

7 Press ⇧/⇩ buttons to select [OK], then press EXEC button.

The time code value is set. The menu display returns to that of step **2**.

8 Press ⇧/⇩ buttons to select [OK], then press EXEC button.

The menu display returns to that of step **1**.

To cancel the time code setting

Select [CANCEL] in step **7**, then press EXEC button.

To reset the time code

Select [RESET] in step **4**, then press EXEC button.

To set the value of the user bits

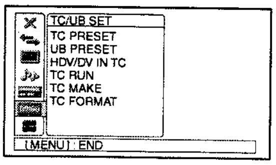
You can set the user bits as eight-digit hexadecimal values (base 16) to have the date, time, scene number, and other information inserted into the time code track.

Note

When HDV signals are input from i HDV/DV jack, the user bits of HDV signals are applied.
In the event of this, you do not have to follow the procedures below.
When recording the internal color bars in HDV format, user bits can still be set.

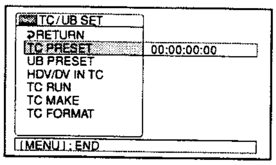
1 Press MENU button to display the menu.

For details on the menu, see "Operating the Menus" on page 65.


TC/UB SET
TC PRESET
UB PRESET
HDV/DV IN TC
TC RUN
TC MAKE
TC FORMAT
[MENU]: END

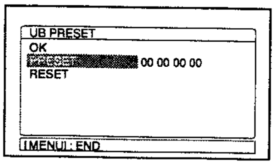
2 Press ⇧/⇩ buttons to select [TC/UB SET], then press EXEC button.

The following menus are displayed.


TC/UB SET
RETURN
TC PRESET
00:00:00:00
UB PRESET
HDV/DV IN TC
TC RUN
TC MAKE
TC FORMAT
[MENU]: END

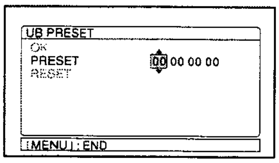
3 Press ⇧/⇩ buttons to select [UB PRESET], then press EXEC button.

The following menus are displayed.


UB PRESET
OK
PRESET
00 00 00 00
RESET
[MENU]: END

4 Press ⇧/⇩ buttons to select [PRESET], then press EXEC button.

The following menus are displayed.



5 Set the first two digits. Press ⇧/⇩ buttons to select the number, then press EXEC button.

6 Repeat step **5** to set the rest of the digits.

7 Press ⇧/⇩ buttons to select [OK], then press EXEC button.

The user bit value is set. The menu display returns to that of step **2**.

8 Press ⇧/⇩ buttons to select [OK], then press EXEC button.

The menu display returns to that of step **1**.

To cancel the user bits setting

Select [CANCEL] in step **7**, then press EXEC button.

To reset the user bits

Select [RESET] in step **4**, then press EXEC button.

Note

The user bit is recorded at three-frame intervals for a tape recorded in HDV1080i format.

To select the time code when you record a signal input to i HDV/DV format

Set [HDV/DV IN TC] in [TC/UB SET] menu to select whether to record the internal time code or an external one.

INTERNAL: Records the time code internally generated.

EXTERNAL: Records the time code with video and audio signals input via i HDV/DV jack.

Notes

- When this item is set to [EXTERNAL], the time code input via i HDV/DV jack and the user bits set in [UB PRESET] are recorded.
- When HDV signals are input from i HDV/DV jack the user bit value is also recorded, regardless of [HDV/DV IN TC] setting.
- When this item is set to [EXTERNAL], INPUT SELECT switch on the front panel is set to HDV/DV, and no signal is input via i HDV/DV jack, or the software of the editing controller does not output a time code. If you start recording, bars (– –:– –:– –:– –) are recorded as the time code. When time code signals are input, the bars disappear to record the time code signals.
- When this item is set to [EXTERNAL], if you input time code to i HDV/DV jack that is not continuous or does not advance correctly, the value of the recorded or displayed time code may not be equal to the actual value of the input one. If you use a tape with this problem, you may not perform search or edit, depending on the devices you use.

To set the time code when the recording starts

Set [TC MAKE] in [TC/UB SET] menu to select the time code to be recorded when recording starts.

REGENERATE: The time code value is set to continue the time code from the time code already recorded on the tape. If you start recording from a blank portion of the tape, the time code starts from "00:00:00:00".

PRESET: The time code starts from the value set in [TC PRESET] in [TC/UB SET] menu.

To set the advancement mode

Set [TC RUN] in [TC/UB SET] menu to switch the advancement mode (counting up).

REC RUN: Time code advances only while recording.

FREE RUN: Time code advances even when the unit is not recording and the time indicator is paused. Use this setting to adjust the default time code to the current time and so on.

(Continued)

Notes

- If you set the advancement mode to [FREE RUN], the time code will be updated by the internal clock while the unit's power is off. The time code may have been delayed or advanced when if you turn on the unit power again, play back a tape, or set INPUT SELECT switch to HDV/DV.
- If the internal backup battery charge is exhausted, the time code of FREE RUN setting will be initialized. The internal backup battery is fully charged if you connect the power to the unit for about 24 hours. A fully charged internal battery can run for about 3 months.

To set the frame mode (For 60i only)

Set [TC FORMAT] in [TC/UB SET] menu to switch the frame mode.

AUTO: Automatically sets the mode in accordance with the loaded tape.
If nothing is recorded on the tape, the mode is set to the non-drop frame mode. If the unit cannot read the frame mode correctly from the tape, the unit will use the mode that was set in the last position it was able to read correctly on the tape. If you remove the cassette, the mode of the last position it was able to read correctly is cleared and the mode is set to the non-drop frame mode. If [TC MAKE] is set to [PRESET], the mode is also set to the non-drop frame mode.

DF: Selects the drop frame mode.

NDF: Selects the non-drop frame mode.

Note

When you set [60i/50i SEL] in [OTHERS] menu to [50i], the unit applies the 50i system specification. Therefore, the time code generated by the unit during recording is that of the non-drop frame mode. Even if 60i system signals is input to i HDV/DV jack, when [60i/50i SEL] in [OTHERS] menu is set to [50i], the time code generated by the unit is the non-drop frame mode regardless of [TC FORMAT] setting. To set the unit to generate the time code in the drop frame mode, set [60i/50i SEL] to [60i].

HVR-M25U/M25N/M25E/M25P time codes

The unit has a i HDV/DV jack. The time code displayed and recorded on the tape differs as shown below when INPUT SELECT switch is set to HDV/DV and when it is set to other than HDV/DV.

	[HDV/DV IN TC] menu	INPUT SELECT switch	Mode	Time code/User bits displayed and recorded
Playback			Playback Audio dubbing Playback at various speeds [a] DUB1 [b]	Time code/user bits on the tape
EE	INTERNAL	HDV/DV	Duplicate DUPLICATE PLUS1 [b]	Time code/user bits of another device connected to i HDV/DV jack [c]
			Recording Recording Pause REC1 [b]	Time code/user bits internally generated [c] When the input signal is HDV: User bits input via HDV/DV
		S VIDEO VIDEO	Recording Recording Pause REC1 [b]	Time code/user bits internally generated [c]
	EXTERNAL	HDV/DV	Duplicate DUPLICATE PLUS1 [b]	Time code/user bits of another device connected to i HDV/DV jack [c]
			Recording Recording Pause REC1 [b]	Time code input of another device connected to i HDV/DV jack and user bits internally generated When the input signal is HDV: Time code/user bits of another device connected to i HDV/DV jack.
		S VIDEO VIDEO	Recording Recording Pause REC1 [b]	Time code/user bits internally generated [c]

a) This includes stop, fast-forward or rewind. If the unit cannot read the time code on the tape correctly, the counter displays "– –:– –:– –:– –".

b) "DUB1", "DUPLICATE PLUS1" and "REC1" represent the state of the unit when you press each of these buttons (AUDIO DUB, DUP or REC) in the stop mode.

c) The time code is also displayed on the time counter screen. For details on the time counter, see page 26.

Chapter 4

Dubbing to another equipment using i.LINK jack, Duplication, Audio Dubbing, and Connecting with a Computer

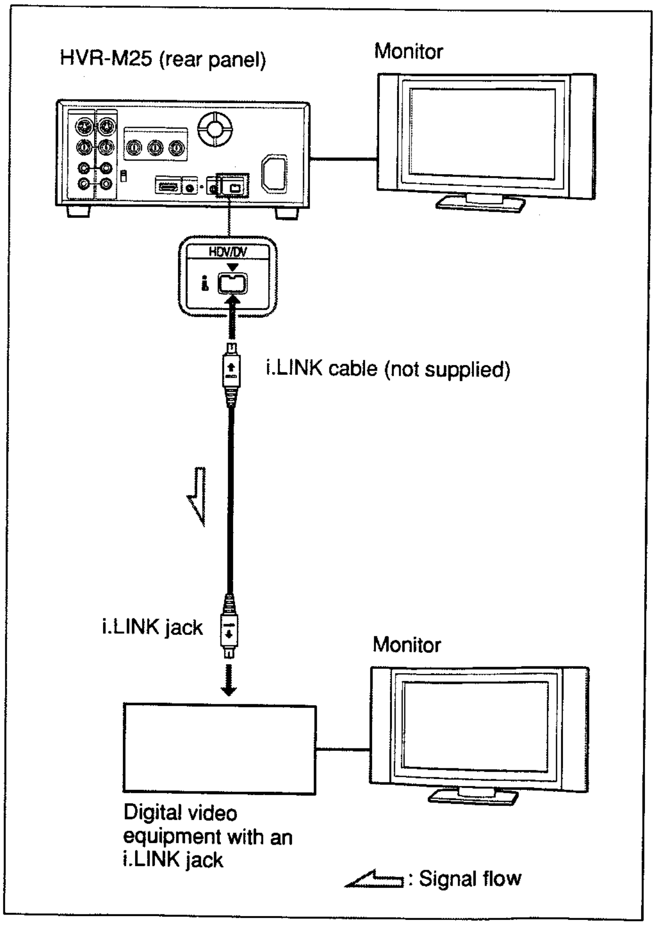
Dubbing to another equipment using i.LINK jack

This section describes the connections and settings necessary to perform dubbing on other equipment, using the unit as a video player.

Connections for Dubbing

Connect the unit to the recorder as shown right using an i.LINK cable.
The signal flow is automatically detected so you do not need to make separate connections for input and output. Also, connecting the unit to an editing controller via i HDV/DV jack, you can configure a digital non-linear editing system.
For connections of the editing controller and the unit, refer to the editing controller instruction manual.

Before dubbing, you must set the format in which you want to output signals. Perform [HDV/DV SEL] *(page 67)* and [i.LINK SET] *(page 69)* settings in [IN/OUT REC] menu.
For details, refer to "Compatibility of HDV, DVCAM, and DV Formats" (page 93).
To dub a tape recorded in HDV format using duplicate function on such as DSR-25/45/50, select [DVCAM] in [HDV → DV CONV] of [i.LINK SET] in [IN/OUT REC] menu.


HVR-M25 (rear panel)
Monitor
HDV/DV
i.LINK cable (not supplied)
i.LINK jack
Monitor
Digital video equipment with an i.LINK jack
⇦: Signal flow

There are some limitations to down convert a tape recorded in HDV format to DVCAM format.
For details, see "i.LINK SET" on page 69.

Notes

- If you output pictures in the playback pause mode when connected with an i.LINK cable, recorded images may appear distorted.
- When the tape is recorded in HDV format, the picture is output as a simplified picture during playback in various speeds *(page 37)*.
- When connected with an i.LINK cable, you cannot output only pictures or sounds separately.
- When you duplicate down converted signals from HDV to DVCAM on an HDV/DV cassette in DVCAM format, the available recording time is reduced to about 2/3 of the recording time indicated on the tape. However, when a DVCAM cassette is recorded using DVCAM format, the available recording time is the same as the recording time indicated on the DVCAM cassette.

Dubbing procedures

1 Prepare the unit.

Refer to "Settings for Recording" on page 45.

2 Prepare the recorder.

If the recorder has an input selector switch, select an input.
For details, refer to your recorder's instruction manual.

3 Start playback on the unit and start recording on the recorder.

For details, refer to your recorder's instruction manual.

4 When dubbing is finished, stop recording on the recorder, and then stop playback of the unit.

Duplication (generating a work tape with the same time code)

DUPLICATE PLUS is a dubbing function which duplicates the tape with time codes through i.LINK connection. By using DUPLICATE PLUS, it helps to make a work tape which contains the exact same time code that the original source tape contains. DUPLICATE PLUS is applicable with HDV1080i, DVCAM, and DV (SP) formats. Also, at the tape end or the tape in PAUSE by operating STOP button, you can change the tape of both the player and recorder during duplication *(page 58)*. Therefore, multiple tapes can be duplicated from multiple resource tapes on a tape continuously.
(The unit does not support cassette memory C|||.)

Note

Use this function when making a one-to-one connection. Also, do not disconnect the i.LINK cable during duplication.

Setting DUPLICATE PLUS mode

Set [DUPLICATE PLUS] mode in [VTR SET] menu.

Setting the duplicating format

Select the duplicating format with [FORMAT SEL] in [DUPLICATE PLUS] mode. The unit functions the same as it has detected a blank portion on a tape, if the unit detects a format other than the selected format (page 58).

ALL : Duplicates the original tape on the recorder.
HDV1080i : The player automatically detects HDV1080i format and duplicate.
DVCAM : The player automatically detects DVCAM format and duplicate.
DV SP : The player automatically detects DV (SP) format and duplicate.

Notes

- If the original signal is mixed with other type of signal as you transfer the image to a computer, the transfer procedures may be interrupted. When transferring an image using a tape dubbed with DUPLICATE PLUS on the unit to a computer, we recommend you to duplicate it in a single format.
- When a non-compatible HDV signals (HDV720p, etc.) is input during duplication after [FORMAT SEL] is set to [ALL], the HDV signals are recorded as an unrecorded portion. Also, when the incompatible DV signals (DV LP etc.,) are input, the signal is recorded in DV SP.
- When the format of a tape is switched to a different format during duplication, the portion where the format is switched may be distorted.

Setting the auto rewind function

Set [AUTO REW] in [DUPLICATE PLUS] to select whether you want to use the auto rewind function.

ON : Rewinds the tape on both the player and the recorder, and starts duplication. Also, when you continue to duplicate a resource tape from multiple tapes, the new work tape will be rewound automatically and start duplication.
OFF : Starts duplicating from the current portion of the tape.

Note

Depending on the specification of the player, you may not search on the beginning of a tape. In this case, set [AUTO REW] to [OFF].

Operating DUPLICATE PLUS

The duplicating procedures of DUPLICATE PLUS differs depending on the duplicate settings.

Note

If you operate the player while duplicating, the duplicate process may be interrupted and the tape may not be correctly duplicated. Do not operate the player while duplicating.

When [AUTO REW] in [DUPLICATE PLUS] is set to [ON]:

1. Connect the unit and the player using an i.LINK cable (not supplied). After turning on the power of the unit, set INPUT SELECT switch on the unit to HDV/DV.

2. Press STOP button on the unit to stop the tape.

3. While holding DUPLICATE PLUS button down, press PLAY button on the unit.

   The unit and the player will automatically rewind the tape to the beginning. The unit enters the duplicate-standby mode. The player enters the playback pause mode. Then DUPLICATE PLUS and PLAY indicators on the unit light and the duplication starts.

Notes

- Before you start duplication, make sure that the player has finished loading the cassette.
- The duplication starts after the i.LINK connection is established so that the first part of the source tape is dropped on the copied tape.
- If the player has functions such as auto repeat, set them to OFF.
- If the player has a still timer function, set the still timer to the longest time to ensure enough time for rewinding the tape to the beginning.
- When you use a DSR-45 as the player, set REMOTE/LOCAL switch of the DSR-45 to [LOCAL].
- If you operate the player while duplicating and the PLAYER UNCONTROLLABLE warning message appears and duplication stop, press EXEC button on the unit to end duplication once and repeat the procedures.

When [AUTO REW] in [DUPLICATE PLUS] is set to [OFF]:

1 Connect the unit and the player using an i.LINK cable (not supplied). After turning on power of the unit and the player, set INPUT SELECT switch on the unit to HDV/DV.

2 Locate the points where you want to start playback and recording on each tape.

3 Press STOP button on the unit.

4 While holding DUPLICATE PLUS button down, press PLAY button on the unit.

The unit enters the duplicate-standby mode. The player enters the playback pause mode. Then DUPLICATE PLUS and PLAY indicators on the unit light and duplication starts.

To adjust the point where duplication starts, while holding DUPLICATE PLUS button down, press PAUSE button and PLAY button in step **4**. The unit will not start duplication until you press PAUSE button again.
After confirming that the PLAYER display has changed to [READY] (blinking) on LCD monitor, adjust the duplication start point using the player, then press PAUSE button on the unit to start duplication.

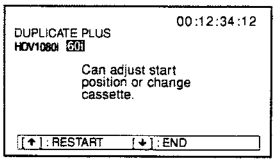
Notes

- Before you start duplication, make sure that the player has finished loading the cassette.
- The duplication starts after the i.LINK connection is established so that the first part of the source tape is dropped on the copied tape. Play back the tape a few frames back of the portion where you want to begin the duplication.
- If the player has functions such as auto repeat, set them to OFF. Also, when the player has an auto rewind function, set the function to ON.
- You may not duplicate the beginning of the source tape. Locate the recorded portion on the source tape, and then start duplication.
- If there is a blank portion on the tape, the first part of the recorded portion that follows may be dropped on the copied tape.
- When the time code on a player operates either discontinuously or incorrectly, the difference in frame values between the numeric time codes may occur.

To cancel duplication

1 Press STOP button on the unit, and pause duplicating.

While pausing, the following confirmation display appears.



Can adjust start position or change cassette.

2 Press ⇩ button.

Duplicating mode ends.

Duplication (generating a work tape with the same time code)

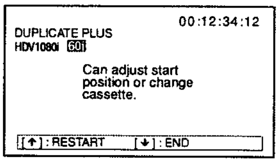
Duplicating a series of tapes

While pausing duplication mode, you can change the tape on the player. Therefore, you can duplicate a series of tapes on a single tape.

To change the tapes

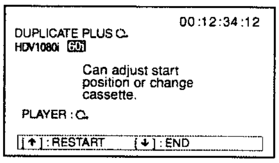
1 By playing back the tape on the player to the end or by pressing STOP button on the unit, confirm that the player enters the playback pause mode.

During pause, the confirmation display appears.



00:12:34:12
DUPLICATE PLUS
HDV1080i 60i
Can adjust start position or change cassette.
[↑]: RESTART [↓]: END

2 Eject the tape in the player, and load the another tape.



00:12:34:12
DUPLICATE PLUS ↺
HDV1080i 60i
Can adjust start position or change cassette.
PLAYER : ↺
[↑]: RESTART [↓]: END

When [AUTO REW] is set to [ON], ↺ is displayed.

You can eject the tape on the recorder to insert a new tape at this time.

3 Press ⇧ button.

Duplication starts again.

When [AUTO REW] is set to [ON], the newly inserted tape is rewound automatically.

Notes

- When you change the source tapes, the beginning of the connecting portion of the recorded content of the work tape may be distorted.
- When you start duplication again, the beginning of the recorded content of the work tape may be distorted as playback starts again.

Detecting a blank portion during duplication

If the unit detects a blank portion on the source tape during duplication, it skips the blank portion automatically, reducing the length of the recorded part of the tape.
The operations of the player and recorder (the unit) when a blank portion is detected are as follows:

Detected status on source tape	Player/Recorder (the unit) operation
Detects a blank portion	Player: Continues playing the tape. Recorder: Continues recording.
Certain seconds after detection of a blank portion	Player: Continues playing the tape another certain seconds and searches forward. Recorder: Stops.
Detects next recorded portion	Player: Rewinds the tape at about –2 times its normal speed to the location immediately before the blank portion ends. Recorder: Remains stopped.
Returns to the location immediately before the blank portion ends	Player: After entering the playback pause mode, starts playing the tape. Recorder: After entering the recording pause mode, starts recording.

The unit performs the above operations automatically to reduce the blank portion of a tape during duplication.

Notes

- Depending on the specifications, the skip function may not work on some players.
- When the unit resumes duplication, the first part of the recorded portion on the source tape may be dropped on the copied tape.
- A recorded portion of less than one minute between two blank portions may not be duplicated.

Warning messages on duplication

If an error occurs during duplication, a STOP/ CAUTION number and warning message will be displayed on LCD monitor and the video output screen.

The following table lists these warnings and messages. If a warning message is displayed, check this table and take the appropriate action.

STOP/ CAUTION No.	Warning Message	Cause/Remedy
00	RECORDER: INPUT SELECT is not set to HDV/DV.	INPUT SELECT switch on the recorder (the unit) is not set to HDV/DV. → Set INPUT SELECT switch to HDV/DV.
01	i.LINK : Cable not connected.	The i.LINK cable is not connected correctly. → Connect the i.LINK cable correctly.
02	i.LINK : Check i.LINK connection.	There are multiple i.LINK connections or the i.LINK connection is looped. → You cannot connect multiple devices. Connect only one player to the unit.
03	i.LINK : Check i.LINK connection.	The i.LINK cable has been unplugged and plugged in again. → Check the i.LINK cable connection. Try to duplicate again.
10	PLAYER: Recording.	The player is in the recording mode.
11	PLAYER: No cassette	There is no cassette in the player.
12	PLAYER: Cannot control.	The player cannot be controlled.
13	PLAYER: Cannot control.	The player rejects control.
14	PLAYER: Cannot control.	The player is disabled or is in a different mode than the recorder (the unit) has requested.
15	PLAYER: Cannot control.	The player is under an inappropriate condition.
16	PLAYER: Cannot record due to copyright protection.	A copyright protected signal is recorded on the cassette in the player. → You cannot duplicate copyright protected signals.
17	PLAYER: Error detected.	The player has detected self-diagnostics.
18	PLAYER: Moisture	Moisture condensation has occurred in the player. → Refer to the instruction manual of the player.
20	RECORDER: No cassette inserted.	There is no cassette in the recorder.
21	RECORDER: The tape is locked. –check the tab.	REC/SAVE switch is set to SAVE switch on the cassette. → Slide REC/SAVE switch to REC on the cassette.
22	RECORDER: Reinsert the cassette.	The recorder (the unit) detected self-diagnostics. → Insert a cassette again.
23	RECORDER: Re-attach the power source	The recorder (the unit) detected self-diagnostics. → Remove the power cord from the recorder.
24	RECORDER: Condensation. Cannot open. Try later.	Moisture condensation has occurred while the cassette is in the recorder (the unit). → Remove the cassette and power on and wait for more than one hour.
25	RECORDER: Moisture condensation. Turn off for 1H.	Moisture condensation has occurred while the cassette is not in the recorder. → Power on the recorder and wait for more than one hour.
26	RECORDER: Dirty video head. Use a cleaning cassette.	The recorder's (the unit) video heads are clogged. → Clean the video heads with the supplied cleaning cassette *(see page 90).*

Note

When a warning message other than above is displayed, consult your Sony dealer.

Audio Dubbing

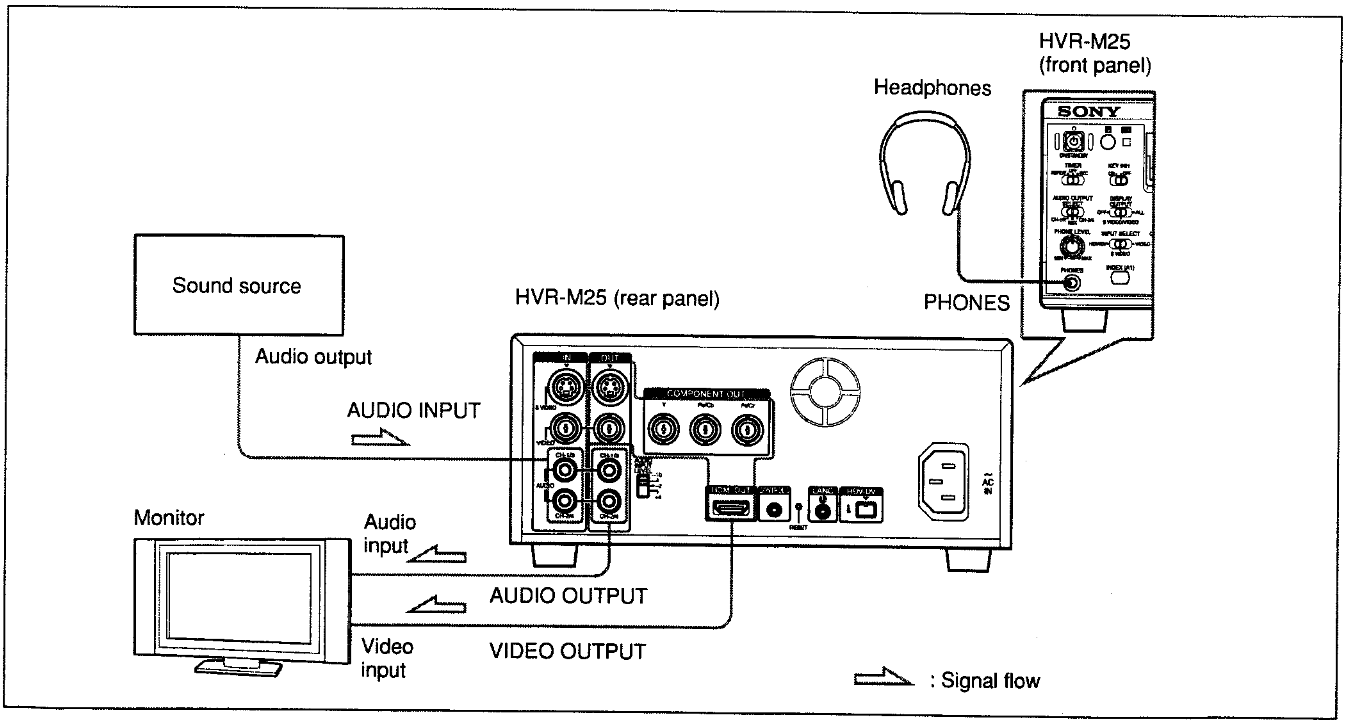
You can record just sound on a recorded tape. (Audio dubbing)

Notes

- You can dub the sound onto a DVCAM-formatted tape recorded in the 32 kHz audio mode (4-channel/ 12 bits) only. You cannot dub the sound on a tape in the 48 kHz audio mode (2-channel/16 bits). If the audio mode of the recorded tape is 32 kHz, you can dub the sound regardless of [AUDIO MODE] setting in [AUDIO SET] menu.
  For details on "AUDIO MODE," see "AUDIO SET" menu on page 73.
- The sound is dubbed only onto channels 3/4. You cannot dub the sound onto channels 1/2.

Connection of external devices

The following shows an example of a basic connection for audio dubbing.


HVR-M25
(front panel)
Headphones
Sound source
HVR-M25 (rear panel)
PHONES
Audio output
AUDIO INPUT
Monitor
Audio input
AUDIO OUTPUT
Video input
VIDEO OUTPUT
: Signal flow

When an HDMI cable is used for connection, Audio cable connection is not necessary.

Dubbing sound

1 Connect AUDIO INPUT jack of the unit and the sound source using a phono jack cable (not supplied).

2 Set INPUT SELECT switch to a setting other than HDV/DV.

3 Switch AUDIO INPUT LEVEL switch to select the audio input signal level (–10, –2 or +4).

4 Play back the tape inserted in the unit.

5 At the point you want to start dubbing, press PAUSE button to turn the unit to the playback pause mode.

6 While holding AUDIO DUB button down, press PLAY button to turn the unit to the audio dubbing pause mode.

AUDIO DUB indicator on the unit lights.

7 Set AUDIO INPUT switch to set the adjusting method of the recording level.

8 Adjust the recording level by turning AUDIO REC LEVEL control knobs.

You can adjust the recording level with AUDIO REC LEVEL control knobs if you have selected MANU in step **7**. While looking at the audio level meters on STATUS CHECK screen, turn AUDIO REC LEVEL control knobs and adjust the recording level. Adjust the audio recording level so that the recording level does not exceed 0 dB when the audio signal is at its maximum. If the recording level exceeds 0 dB, the sound will be distorted.

9 Press PAUSE button.

PAUSE indicator goes off and audio dubbing starts.

To pause audio dubbing

Press PAUSE button.
Pressing PAUSE button again resumes audio dubbing.

To stop audio dubbing

Press STOP button.

To monitor the sound you want

Set AUDIO OUTPUT SELECT switch as follows:

CH-1/2: You can listen to sound recorded on channels 1/2 on the tape.

CH-3/4: You can listen to sound to be dubbed on channels 3/4.

MIX: You can listen to the sound on the tape and the dubbed sound.

For details on the audio levels display in the audio dubbing mode, see page 27.

Notes

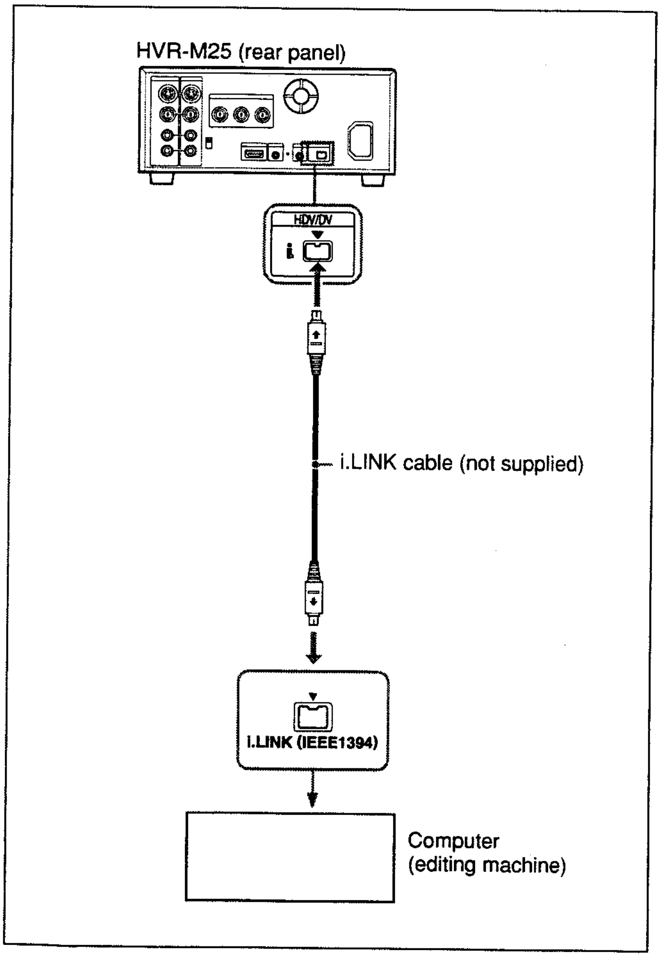
- You can monitor the sound on the tape while dubbing the sound. However, there are some delays between the sound being recorded and the sound being played. When you play back the tape after audio dubbing, you might hear the dubbed sound later than the sound monitored during audio dubbing.
- You cannot dub sounds onto a blank portion of the tape.

Editing (Connecting with a Computer)

You can set up an editing system by connecting the unit to a computer (editing machine) using i HDV/DV jack on the unit.

- For details on the connecting method to the editing machine, refer to the supplied instruction manual of your editing unit.
- The editing functions you can use depend on the editing software. For details on editing methods, refer to the instruction manual of your editing software.

Connecting the Unit to a Computer



Notes

- Be sure to connect the i.LINK cable to a computer (editing machine) first and then connect it to the unit. If you connect the i.LINK cable to the unit first, it may cause the unit to malfunction because of static electricity.
- If no picture appears via i HDV/DV jack, disconnect the i.LINK cable, then reinsert it straight.
- If the unit is connected to a device equipped with a 6-pin i.LINK jack, when you intend to disconnect or reconnect the i.LINK cable, turn off the device and pull out the plug of its power cord from the wall outlet beforehand. If you connect or disconnect the i.LINK cable while the device is connected to the AC outlet, high-voltage current (8 to 40 V) is output from the i.LINK jack of the device to the unit, which may cause a malfunction.
- Before connecting the i.LINK cable, set [HDV/DV SEL] and [i.LINK SET] in [IN/OUT REC] menu. If you perform the settings after connecting the cable, the computer (editing machine) may not recognize the unit correctly or may freeze.
- If you input or output signals in a format incompatible with the computer (editing machine), the computer may not recognize the unit correctly or may freeze.
- When set to EE mode, the unit outputs analog signals those are input from i HDV/DV jack to a computer. S VIDEO or VIDEO signals are output from i HDV/DV jack, according to the setting of INPUT SELECT switch. To output the playback image from the unit through i HDV/DV jack only, set INPUT SELECT switch to HDV/DV.

Preparations

Transferring picture data from the unit to a computer (editing machine)

- To transfer the picture data recorded on a tape to an editing machine in HDV, set [HDV/DV SEL] in [IN/OUT REC] menu to [HDV] *(page 67)*, then set [HDV→DV CONV] of [i.LINK SET] in [IN/OUT REC] menu to [OFF] *(page 69)*.
- To transfer the picture data recorded on a tape in DVCAM (DV) to an editing machine, set [HDV→DV CONV] of [i.LINK SET] in [IN/OUT REC] menu to [OFF] *(page 69)*.
- To transfer the picture data recorded on a tape in HDV to an editing machine in DVCAM (DV), select [DVCAM] or [DV SP] in [HDV → DV CONV] of [i.LINK SET] in [IN/OUT REC] menu, then set [DOWN CONVERT] *(page 69)*.

Notes

- The operation may not work with some of your editing machine software. Before using the software, confirm that it is compatible with the unit.
- The unit cannot up convert a tape recorded in DVCAM (DV) format to HDV format when transferring the picture data on an editing machine.
- If you use a tape recorded both in HDV and DVCAM (DV) formats when [HDV/DV SEL] is set to [AUTO], the computer (editing machine) may not recognize the unit or you may not edit the tape correctly.
- There are restrictions on the video output when you play back a tape recorded in HDV format at various speeds. Refer to the table for "HDV-formatted tape" in "Playing at various speeds" *(page 37)*.
- When you use a tape that was down converted from HDV to DVCAM or DV, some conventional DVCAM/DV editing software may not perform the time code search or this operation could result in an error.
- When you record HDV signals that are input through i HDV/DV jack, a connecting portion between scenes on the tape will be displayed as a still picture for approximately 1 second. We recommend you to perform digital nonlinear editing.
- If your editing software has the capability to output the time code as well as the video and audio signals to the unit, and you intend to record that time code, set [HDV/DV IN TC] in [TC/UB SET] menu of the unit to [EXTERNAL].
  For details on TC/UB SET menu, see "TC/UB SET" menu on page 75.
- When [HDV/DV IN TC] in [TC/UB SET] menu is set to [EXTERNAL], if you input time code to the i HDV/DV jack that is not continuous or does not advance correctly, the value of the recorder or displayed time code may not be equal to the actual value of the input one. If you use a tape recorded under such condition, you may not perform search or edit the picture, depending on the device you use.
- For connection of the editing controller and its peripheral devices, refer to the instruction manual of the editing controller and that of the editing software you use.
- The editing functions you can use depend on the editing software. For details on editing methods, refer to the instruction manual of your editing software.
- The unit has a function to down convert HDV signals to DVCAM (DV) signals to output from i HDV/DV jack. Some software may not edit the DVCAM/DV signals that are down converted from HDV signals correctly. In this case, follow the procedures below for tape duplication, then use the duplicated tape when editing the picture.

Creating a DVCAM compatible tape

Set [HDV → DV CONV] of [i.LINK SET] in [IN/OUT REC] menu to [DVCAM], then perform DVCAM recording using a recording device that accepts DVCAM format.

Creating a general consumer DV compatible tape

Set [HDV → DV CONV] of [i.LINK SET] in [IN/OUT REC] menu to [DV SP], set [DOWN CONVERT] then perform DV recording using a recording device that accepts DV format.

Transferring picture data from a computer (editing machine) to the unit

- To transfer the picture data recorded on a tape to an editing machine in HDV, set [HDV/DV SEL] in [IN/OUT REC] menu to [HDV], then set [HDV → DV CONV] of [i.LINK SET] in [IN/OUT REC] menu to [OFF] *(page 69).*
- To transfer the picture data to a computer (editing machine) in DVCAM (DV) format, set [HDV/DV SEL] to [DV] *(page 67).* Then, according to the desired recording format, set [📼 REC MODE] to [DVCAM] or [DV SP] *(page 67).* Also, according to your edit software, select [DVCAM] or [DV SP] in [HDV → DV CONV] of [i.LINK SET] in [IN/OUT REC] menu *(page 69).*

Chapter 5

Adjusting and Setting Through Menus

Operating the Menus

The unit allows you to set various parameters in the menus. Before you start using the unit, set the internal clock in [CLOCK SET] in [OTHERS] menu. Except for clock setting, you can use all other factory-set default parameters but change them as needed.

Notes

- Do not pull out the power cord plug while operating the menus. Otherwise, the settings of the menu may be changed accidentally.
- If the internal backup battery is exhausted, the time set in the internal clock, 60i/50i setting, and the time code of FREE RUN setting will be initialized. The internal backup battery is fully charged if you connect the power to the unit for about 24 hours. A fully charged internal battery can run for about 3 months.

Displaying the menu

1 Press MENU button.

2 Pressing ⇧/⇩ buttons, select the menu icon you want to change, then press EXEC button.

3 Pressing ⇧/⇩ buttons, select the submenu you want to change, then press EXEC button.

4 Pressing ⇧/⇩ buttons, change the setting.

5 Press EXEC button to return to the submenu.

6 Repeat steps **1** to **5**, as needed.

To return to the previous menu level, press ⇧/⇩ buttons and select [⮐RETURN].

You can use ⇦/⇨ buttons to move the menu cursor and to adjust increase/decrease settings.

Operating the Menus

Menu Organization

The menu of the unit consists of the following menus and submenus.

- **IN/OUT REC**
  - HDV/DV SEL (*page 67*)
  - ▣ REC MODE (*page 67*)
  - VIDEO OUT (*page 68*)
  - i.LINK SET (*page 69*)
  - CROP ADJUST (*page 69*)
  - CROP MARKER (*page 69*)
  - COLOR BAR (*page 70*)
  - BARS TYPE (*page 70*)
  - DV BARS (*page 70*)
  - EE/PB SEL (*page 71*)
  - 480i LEVEL (*page 71*)
- **DISPLAY SET**
  - COUNTER SET (*page 71*)
  - MARKER BURN (*page 72*)
  - ALLSCAN MODE (*page 72*)
  - DATA CODE (*page 72*)
  - LETTER SIZE (*page 72*)
  - DATE DISPLAY (*page 72*)
  - TIME DISPLAY (*page 72*)
  - ▣ REMAINING (*page 72*)
  - LCD BRIGHT (*page 72*)
  - LCD COLOR (*page 72*)
  - LCD BLACK (*page 73*)
- **AUDIO SET**
  - AUDIO MODE (*page 73*)
  - AUDIO MONI (*page 73*)
  - AUDIO LOCK (*page 73*)
  - JOG AUDIO (*page 73*)
- **VTR SET**
  - DUPLICATE PLUS (*page 74*)
  - CUSTOM REPEAT (*page 74*)
  - AUTO INDEX (*page 74*)
  - STILL PICT (*page 74*)
  - FF/REW SPEED (*page 74*)
  - STILL TIME (*page 75*)
  - FROM STILL (*page 75*)
  - FROM REC P (*page 75*)
- **TC/UB SET**
  - TC PRESET (*page 75*)
  - UB PRESET (*page 75*)
  - HDV/DV IN TC (*page 76*)
  - TC RUN (*page 76*)
  - TC MAKE (*page 76*)
  - TC FORMAT (*page 76*)*
- **OTHERS**
  - ASSIGN BTN (*page 77*)
  - LANGUAGE (*page 77*)
  - COMMANDER (*page 77*)
  - PB YNR (*page 78*)
  - PB CNR (*page 78*)
  - BEEP (*page 78*)
  - CLOCK SET (*page 78*)
  - HOURS METER (*page 78*)
  - AC ON MODE (*page 78*)
  - AUTO STANDBY (*page 78*)
  - 60i/50i SEL (*page 79*)
  - INITIALIZE (*page 79*)

* available only when you use a 60i signal

Menu Contents

Initial settings are indicated with rectangles.

IN/OUT REC menu

Icon/Menu	Submenu	Setting
⇆ IN/OUT REC	HDV/DV SEL *(page 34, 44, 54, 62)*	Normally, set this menu to [AUTO]. Select this menu when you want to limit the output format during tape playback or limit the signals to be input or output from HDV/DV jack. This setting will affect analog outputs. $\boxed{\text{AUTO}}$: Automatically switches signals to HDV format or DVCAM/DV format during tape playback. When the i.LINK cable is connected, the signals in HDV format or DVCAM/DV format will be switched automatically and signals from HDV/DV jack will be input /output for recording/playback. **HDV :** Outputs portions of signals recorded in HDV format during tape playback. When the i.LINK cable is connected, only the signals in HDV format from HDV/DV jack will be input/output for recording/playback. Also, select this setting when the unit is connected to the i.LINK cable to a computer supporting HDV format *(see page 44, 54).* **DV :** Outputs signals of portions recorded in DVCAM/DV format during tape playback. When the i.LINK cable is connected, only the signals in DVCAM/DV format from HDV/DV jack are input or output for recording/playback. Also select this setting when the unit is connected to the i.LINK cable to a computer that supports DV format *(see page 44, 54).* **Notes** • Before changing the setting, be sure to disconnect the i.LINK cable, or turn the other device off. If an i.LINK cable is connected when you change the setting, the video equipment may not recognize the signals correctly. • If you select [AUTO], the screen turns off temporarily when HDV signals are switched to DVCAM/DV signals or vice versa. The video and audio also stops at the same time. • For details on the i.LINK output and the recording tape format, *see pages 96 and 97.*
	REC MODE	Switches the recording mode between DVCAM and DV format (SP mode only). $\boxed{\text{DVCAM}}$: Records in DVCAM format. **DV SP :** Records in DV format (SP mode). **Note** You cannot change the setting during recording.

(Continued)

Icon/Menu	Submenu	Setting
IN/OUT REC	VIDEO OUT	Selects the mode of the video output jacks. **HDMI/CMPNT** Selects the output format from HDMI OUT jack and COMPONENT OUT jacks. Select from [480i], [480p/480i], [1080i/480i], or [720p/480i] when [60i/50i SEL] in [OTHERS] menu is set to 60i. Select from [576i], [576p/576i], [1080i/576i], or [720p/576i] when [60i/50i SEL] in [OTHERS] menu is set to 50i. **DOWN CONVERT** Selects the setting for down converting images output from HDMI OUT jack and analog video jacks when playing back HDV format or inputting HDV signals from HDV/DV jack. **SQUEEZE**: Maintains the image vertically and horizontally by compressing the horizontal ratio. Images appear vertically long. **LETTER BOX :** Maintains the image vertically by compressing the vertical ratio. **EDGE CROP :** Maintains the original image size and crops the left and right edges of the images. **Notes** • When you play back an HDV-formatted tape with copyright protected signals, or input HDV format with copyright protected signals to HDV/DV jack, COMPONENT OUT jacks will output pictures in either 480i or 576i format. • Regardless of the playback tape or of the format input to HDV/DV jack, the selectable setting values displayed on this menu vary depending on the setting of [60i/50i SEL]. • WSS (Wide Screen Signaling) is not output, when the picture is output to COMPONENT OUT jacks in 480p or 576p. Set the monitor according to the down convert format of the picture, which is output from the unit. • When you play back a tape in DVCAM (DV) format while an EE picture in NTSC/PAL is displayed, the 480i resolution or the 576i resolution is output, regardless of the setting of [HDMI/CMPNT].

Icon/Menu	Submenu	Setting
IN/OUT REC	i.LINK SET *(pages 34, 54)*	Adjusts the down conversion format. This menu is available when [HDV/DV SEL] is set to [AUTO] or [HDV]. **HDV → DV CONV** **OFF**: Disables down conversion. **DVCAM :** Down converts to DVCAM format. **DV SP :** Down converts to DV SP format. **DOWN CONVERT** This setting is available when [HDV → DV CONV] is set to [DVCAM] or [DV SP]. **SQUEEZE**: Plays back with compressed horizontal screen image and maintains all images on display. Images appear vertically long. **EDGE CROP :** Plays back with both left and right sides of the screen images cut off and maintains the original image appearance. **Notes** • When [DVCAM] is selected, there are some limitations described below. – ATN (Absolute Track Number) outputs the value counted in DVCAM format during playback at regular speed (×1) or recording of the internal color bars only. During playback at irregular speeds other than described above, ATN outputs the value of a tape recorded in HDV format. – When the unit is playing back at regular speed (×1) while detecting a blank portion on the tape, the unit counts the blank portion as ATN-formatted in DVCAM. – When using the duplicating function that is equipped with a device such as the DSR-25/45/50, select [DVCAM]. – Please note that a duplicated tape and the source tape recorded in HDV format with [DVCAM] selected do not share the same ATN (Time code value is displayed correctly). • When you change the video format setting of [DOWN CONVERT] of [i.LINK SET] in [IN/OUT REC] menu, the video signal output from COMPONENT OUT jacks, S VIDEO OUT jack, or VIDEO OUT jack may be distorted for a moment. • Before changing your setting, be sure to disconnect the i.LINK cable. If you change the setting while i.LINK is connected, the video device may not recognize the new setting. • When you select [EDGE CROP], the outputs of S VIDEO and VIDEO are limited. For details, *see page 85.*
	CROP ADJUST *(page 41)*	Adjusts the position of edge cropping when down converting 16:9 to 4:3 aspect ratio. Adjusts the position of the crop marker by pressing ⇦/⇨ buttons to move either left or right, and press EXEC button to finish. (You can also use ⇧/⇩ buttons.)
	CROP MARKER *(page 41)*	Selects whether to display EDGE CROP MARKER or not. **OFF**: Does not display the crop marker. **ON :** Displays the crop marker. **Notes** • This setting is only available, when [DOWN CONVERT] of [VIDEO OUT] or [i.LINK SET] in [IN/OUT REC] menu is set to [EDGE CROP]. • EDGE CROP MARKER is displayed when HDV-formatted tape is played back. EDGE CROP MARKER is also displayed when HDV signals are input to HDV/DV jacks.

(Continued)

Operating the Menus

Icon/Menu	Submenu	Setting
⇆ IN/OUT REC	COLOR BAR	Selects whether to display color bars or not. Also, you may select color bars with or without tone signals (1 kHz full bit –20 dB at 60i, 1 kHz full bit –18 dB at 50i). **OFF** : Does not display color bars and no tone signals. **ON :** Displays color bars without tone signals. **ON [TONE] :** Displays color bars with tone signals. **Notes** • Color bars and tone signals are output from HDMI OUT jack, i HDV/DV jack, and analog output jacks. • Color bars and tone signals cannot be output when the tape is in playback mode. • The color bars output to i.LINK/the color bars and tone signals recorded on tapes/the format of tone signals can be set by [HDV/DV SEL] and [▣REC MODE]. – When [HDV/DV SEL] is set to [AUTO], the format of the color bar and tone signals will be output/recorded according to the video format displayed in "❶ Format indicator" *(page 25)* of text data display on a monitor. – When [HDV/DV SEL] is set to [HDV], color bars and tone signals are output/recorded in HDV format. – When [HDV/DV SEL] is set to [DV] and [▣REC MODE] in [IN/OUT REC] menu is set to [DVCAM], color bars and tone signals will be output/recorded in DVCAM format. – When [HDV/DV SEL] is set to [DV] and [▣REC MODE] in [IN/OUT REC] menu is set to [DV SP], color bars will be output/recorded in DV (SP) format. • When the unit turns off and on again, [COLOR BAR] is automatically set to [OFF].
	BARS TYPE	Selects the type of color bars. **TYPE 1** : Outputs TYPE 1 color bars. **TYPE 2 :** Outputs TYPE 2 color bars. **TYPE 3 :** Outputs TYPE 3 color bars. **Notes** • When color bars are output in NTSC (60i) mode on the unit, no-setup (0 IRE) signals are output. • Even when the unit's screen aspect ratio displays 4:3, the color bars are generated as 16:9. To output the edge crop (4:3) in HDV format, select [TYPE 1]. • Color bars on the unit are generated in HDV (1080i) resolution. When a resolution other than HDV (1080i) is output, the color bars are down converted and output. The transition edges between the color bars are distorted. • You cannot change the current setting during recording.
	DV BARS	Selects the aspect ratio of color bars set in [BARS TYPE] (DVCAM/DV (SP) format only). **16:9** : Sets the aspect ratio of color bars to 16:9. **4:3 :** Sets the aspect ratio of color bars to 4:3. **Note** You cannot change the current setting during recording.

<table>
<tr><th>Icon/Menu</th><th>Submenu</th><th>Setting</th></tr>
<tr><td rowspan="2">IN/OUT REC</td><td>EE/PB SEL
<i>(page 14)</i></td><td>Sets the stop, fast-forward and rewind modes.
EE: Outputs EE picture and EE sound.
PB : Mutes the image and sound.
Note
If this item is set to PB, the output from the unit will be as follows when you press any of the REC, DUPLICATE PLUS, or AUDIO DUB buttons separately when the unit is stopped (unless the cassette has been write-protected).
<table>
<tr><th></th><th>Image</th><th>Sound</th><th>Time code</th></tr>
<tr><td>REC button</td><td>EE picture of the input image</td><td>EE sound of the input sound (CH-1/2) a)</td><td rowspan="4"><i>(See page 53)</i></td></tr>
<tr><td>DUPLICATE PLUS button b)</td><td>Image input to ℹ HDV/DV jack</td><td>Sound input to ℹ HDV/DV jack</td></tr>
<tr><td>AUDIO DUB button</td><td>Mute screen (black)</td><td>EE sound of the input sound (CH-3/4) a)</td></tr>
<tr><td>No button is pressed</td><td>Mute screen (black)</td><td>Mute (no sound)</td></tr>
</table>
a) Set AUDIO OUTPUT SELECT switch appropriately.
b) When INPUT SELECT switch is set to HDV/DV.</td></tr>
<tr><td>480i LEVEL</td><td>Selects the component output level of luminance and chrominance from either BETACAM or SMPTE signals when the component output is set to 480i.
BETACAM: Sets COMPONENT OUT jacks to BETACAM level.
SMPTE : Sets COMPONENT OUT jacks to SMPTE level.
Note
For details on COMPONENT OUT jacks specifications, <i>see page 100.</i></td></tr>
</table>

DISPLAY SET menu

Icon/Menu	Submenu	Setting
DISPLAY SET	COUNTER SET	Selects the appearance of the time counter. **DISPLAY** **ON**: Enables the time counter display. **OFF** : Disables the time counter display. **SIZE** **LARGE**: Displays the time counter in large letters. **SMALL** : Displays the time counter in small letters. **COLOR** **TYPE 1**: Displays the time counter with color type 1. **TYPE 2** : Displays the time counter with color type 2. **TYPE 3** : Displays the time counter with color type 3. **TYPE 4** : Displays the time counter with color type 4.

(Continued)

Operating the Menus

Icon/Menu	Submenu	Setting
DISPLAY SET	MARKER BURN *(page 42)*	Selects whether to output MARKER BURN or not. **OFF**: Does not output MARKER BURN. **ON** : Outputs MARKER BURN. **Note** There are some limitations to output MARKER BURN. For details, *see page 42.*
	ALLSCAN MODE	Reduces the image on LCD panel to check the area surrounding the picture frame where the monitors can not display. **OFF**: Disables the ALLSCAN MODE. **ON** : Enables the ALLSCAN MODE. **Notes** • ALLSCAN MODE is for HDV format only. ALLSCAN MODE does not activate when DVCAM and DV(SP)-formatted tapes are played. • If formats are mixed on a tape, the part where the format has changed on a tape cause distortion of images. • When [ON] is selected and the output level of COMPONENT OUT is set to 480i, 576i, 480p/480i, or 576p/576i, output images from S VIDEO OUT jack and VIDEO OUT jack down converts to letter box. For details, *see page 85.* • Once the unit turns off, the setting of [ALLSCAN MODE] sets to [OFF] automatically. • When you set [MARKER BURN] and [ALLSCAN MODE] in [DISPLAY SET] menu to [ON] at the same time, the marker will not appear in the correct position on LCD monitor. This is not a malfunction. The marker will be output correctly via each video jack.
	DATA CODE *(page 36)*	Selects whether or not to display the data codes on the analog video output. **OFF**: Does not display the data codes. **DATE:** Displays the date and time when recorded. **CAMERA DATA:** Displays the camera data.
	LETTER SIZE	Selects the letter size of the menu at the cursor. **NORMAL**: Normal size **2 x** : Double height size
	DATE DISPLAY	Selects the date display in the search screen, the data code display, etc. **Y/M/D** : Displays YY/MM/DD (year/month/day). **M/D/Y:** Displays MM/DD/YY (month/day/year). (Default setting for HVR-M25U/M25N.) **D/M/Y:** Displays DD/MM/YY (day/month/year). (Default setting for HVR-M25E/M25P.)
	TIME DISPLAY	Selects the time display in the search screen, the data code display, etc. **12H** : Displays 12-hour time. (Default setting for 60i as the factory setting.) **24H** : Displays 24-hour time. (Default setting for 50i as the factory setting.)
	REMAINING *(page 26)*	**AUTO**: The remaining tape time is displayed for 8 seconds under the following conditions. – If the remaining tape time is determined when you turn on power while a cassette is loaded in the unit. – When you press PLAY button. Always displays under the following conditions. – Fast forward, rewind – Fast forward during playback, rewind during playback **ON** : Always displays the remaining tape time.
	LCD BRIGHT	Adjusts LCD monitor brightness. Press ⇧/⇩ buttons and EXEC button to adjust the brightness. (The mark under the bar is the factory setting value.)
	LCD COLOR	Adjusts the color density of LCD monitor. Press ⇧/⇩ buttons and EXEC button to adjust the brightness. (The mark under the bar is the factory setting value.)

Icon/Menu	Submenu	Setting
▦ DISPLAY SET	LCD BLACK	Mutes the images on LCD panel and display only the text data. **OFF**: Does not mute the images **ON** : Mutes the images **Note** When [ON] is selected, the images output from the rear panel to the external monitor does not mute.

AUDIO SET menu

Icon/Menu	Submenu	Setting
♪♪ AUDIO SET	AUDIO MODE *(page 27)*	Selects the audio mode. **FS32K**: Switches the audio mode to 4-channel mode (12-bit mode). **FS48K** : Switches the audio mode to 2-channel mode (16-bit mode). (This setting records the sound in all audio ranges, providing a high-quality sound recording.) **Notes** • When signals are input from i HDV/DV jack, the audio mode of the signals to be recorded is the same as that of the input signals. • Recording performs automatically in [FS48K] mode in HDV format. • You cannot change the current setting during recording. • Noise may occur at the instant you switch the audio mode. • When dubbing a sound source in DVCAM, select [FS32K].
	AUDIO MONI *(page 27)*	Sets the audio that is output from PHONES jack and HDMI OUT jack. **CH1,CH2**: Outputs CH1 and CH2 audio to each channel. **CH1** : Outputs CH1 audio to CH1/2. **CH2** : Outputs CH2 audio to CH1/2. **Note** When AUDIO OUTPUT SELECT switch is set to CH3/4, [CH1] and [CH2] are correspond to [CH3] and [CH4], respectively. When it is set to MIX, [CH1] and [CH2] are correspond to CH1/3 synthesis sound and CH2/4 synthesis sound, respectively.
	AUDIO LOCK	**UNLOCK MODE**: Records the sampling clocks of audio and video independently. This mode applies to a consumer DV tape. **LOCK MODE** : Synchronizes the sampling clocks of the audio and video for recording. This setting is effective for digital processing and performs a clean splice during the audio editing process. **Notes** • You can set this menu when recording in DV format (SP mode) only. • When recording in HDV or DVCAM format, the menu is set to [LOCK MODE]. • During the i.LINK input, the same setting as that of an input signal is selected regardless of this setting.
	JOG AUDIO *(page 38)*	Selects either to turn the sound output on or off when the tape is played at a speed other than normal. (Available in DVCAM/DV format only.) **OFF**: Does not output the sound when playing a tape at a speed other than normal. **ON:** Outputs the sound when playing a tape at a speed other than normal. **Notes** • When a tape recorded in HDV format is played back, the sound cannot be output in various speeds. • Even if you have set this item to ON, the sound may not be output or may be interrupted depending on the recording format or tape conditions.

Operating the Menus

VTR SET menu

Icon/Menu	Submenu	Setting
VTR SET	DUPLICATE PLUS *(page 56)*	Selects the video format and whether to use auto rewind or not while duplication. **FORMAT SEL** **ALL**: Duplicates all video formats. **HDV1080i** : Duplicates HDV1080i format only. **DVCAM** : Duplicates DVCAM format only. **DV SP** : Duplicates DV (SP) format only. **AUTO REW** **ON** : Rewinds the tape on both the player and the recorder, and starts duplication. Also, when you continue to duplicate a resource tape from multiple tapes, the new work tape will be rewound automatically and start duplication. **OFF** : Starts duplicating from the current portion of the tape. **Note** You cannot use these settings during duplication.
	CUSTOM REPEAT *(page 39)*	Adjusts the REPEAT TIMES, REPEAT CYCLE, and START TIME of the CUSTOM REPEAT. **REPEAT TIMES** **ON/OFF** : Selects whether to apply REPEAT TIMES setting or not. **TIMES** : Sets the number of times to repeat playbacks. Set the number by pressing ⇧/⇩ buttons on the unit. **REPEAT CYCLE** **ON/OFF** : Selects whether to apply REPEAT CYCLE setting or not. **CYCLE** : Sets the time of intervals for playback. Set the number by pressing ⇧/⇩ buttons on the unit. **START TIME** **ON/OFF** : Selects whether to apply START TIME setting or not. **TIME** : Sets the starting time of CUSTOM REPEAT. Set the number of each hour and minute by pressing ⇧/⇩ buttons on the unit. Press ⇦/⇨ buttons to switch between hour and minute. Press EXEC button to execute.
	AUTO INDEX *(page 47)*	Selects whether or not to mark an index signal automatically when the unit in the stop mode starts recording. **ON**: Marks an index signal at the beginning of the recording. **OFF:** Does not mark an index signal at the beginning of the recording.
	STILL PICT	Selects the image displayed in the still mode (DVCAM/DV (SP) format only). **AUTO**: Displays an optimized image according to the movement in the image. **FRAME:** Displays a frame image. **FIELD:** Displays a field image. **Notes** • If you select [FIELD], the image of field 2 is displayed. • When a tape has been recorded in HDV format, a field image is always displayed.
	FF/REW SPEED *(page 15)*	Selects the tape transport mode in fast-forward and rewind. **FF/REW**: Fast-forwards or rewinds the tape at maximum speed without displaying the picture. **SHUTTLEMAX** : Fast-forwards or rewinds the tape at maximum speed while displaying the picture. DVCAM NTSC: Approx. 14 times of normal speed PAL: Approx. 17 times of normal speed HDV/DV(SP) Approx. 24 times of normal speed

Icon/Menu	Submenu	Setting
VTR SET	STILL TIME	Selects the time to switch to the tape protection mode from the still mode. **30 sec :** 30 seconds **1 min :** 1 minute **2 min:** 2 minutes **3 min:** 3 minutes **Notes** • If the unit is left in playback pause mode for a long time, the tape or the video heads may be damaged or the video heads may become clogged. Select the shortest time possible. Particularly, when using a Mini-DV cassette that is longer than 60 minutes, select [30 SEC] or [1 MIN]. • When the setting is changed, the first tape protection mode change uses the time setting from before the settings were changed. From the second tape protection mode change, the new time setting is used.
	FROM STILL	Selects the tape protection mode to change the mode after the time set in [STILL TIME] is past **STOP:** Stops the tape. **STEP FORWARD :** Forwards one frame. **Note** If you play a tape recorded in HDV format with [STEP FORWARD] selected, the tape advances a few frames forward.
	FROM REC P	Selects the tape protection mode which the unit changes after the recording has been paused for more than 3 minutes. **STOP:** Stops the tape. **REC PAUSE :** Maintains the recording pause mode. **Note** When the recording pause mode continues for a long time after you select [REC PAUSE], the tape may be damaged or the video heads may be damaged or clogged. If there is no other reason to do this, select [STOP]. Particularly when you use a Mini-DV cassette that is longer than 60 minutes, select [STOP].

TC/UB SET menu

Icon/Menu	Submenu	Setting
TC/UB SET	TC PRESET *(page 50)*	Reset the time code value or set the desired time code value. **RESET :** Resets the time code value to 00:00:00:00. **PRESET :** Sets the desired time code value. **Note** To set the initial time code value, you need to set [TC MAKE] to [PRESET] first. If [TC MAKE] has been set to [REGENERATE], or [HDV/DV IN TC] has been set to [EXTERNAL], this setting is not effective.
	UB PRESET *(page 50)*	Resets the user bits value or set the desired user bits value. **RESET :** Resets the user bits value to 00 00 00 00. **PRESET :** Sets the user bits value. (You can set the user bits as eight-digit hexadecimal values (0 to 9, A to F) (base 16) to have the date, time, scene number, and other information inserted into the user bits.) **Note** When INPUT SELECT switch is set to HDV/DV and HDV signals are input to the unit, this setting is not effective. (When color bar is displaying or recording, this setting is effective.)

(Continued)

Icon/Menu	Submenu	Setting
TC/UB SET	HDV/DV IN TC *(page 49)*	Selects whether to record internal time code or external time code while the unit records the signals input from i HDV/DV jack. **INTERNAL**: Records the time code generated by the internal time code generator. (If [TC MAKE] is set to [REGENERATE] and no time code is recorded on the tape, the unit records time code from 00:00:00:00. If there is time code already recorded on the tape, the unit records continuous time code from this point.) **EXTERNAL:** Records the time code with video and audio signals input from i HDV/DV jack. **Notes** • When this item is set to [EXTERNAL], INPUT SELECT switch on the front panel is set to HDV/DV, and no signal is input from i HDV/DV jack, if you start recording, bars (—:—:—:—) are recorded as time code. At the point that inputting of a signal begins, the time code of that signal will be recorded. • If you set this item to [EXTERNAL] and the external time code input is discontinuous or does not advance correctly, recording or displaying the time code on the unit may not be done correctly. If there is a discontinuous time code on your recorded tape, you may not edit or search correctly, depending on the device used to edit.
	TC RUN *(page 51)*	Selects the advancement mode (counting up). **REC RUN**: Time code value advances only while recording. **FREE RUN :** Time code value advances even when the unit is not recording. (Use this setting to adjust the initial value of the time code to the present time.) **Notes** • If you set the advancement mode to [FREE RUN], the time code will be updated by the internal clock when the power is off. Therefore, when you turn on the unit again, the time code may have been delayed or advanced somewhat. • If the internal backup battery is exhausted, the time code of [FREE RUN] setting is initialized.
	TC MAKE *(page 51)*	Selects the time code when you start recording. **REGENERATE**: The time code value is set to continuous time code from the one already recorded on the tape. If no time code is recorded on the tape, it starts from 00:00:00:00. **PRESET :** The time code starts from the value set in [TC PRESET] in [TC/UB SET] menu.
	TC FORMAT *(page 52)*	Selects the recording mode of the time code when 60i format is used. **AUTO**: Automatically sets the mode in accordance with the mode already set on a cassette tape. (If nothing is recorded on the tape, the non-drop frame mode is set. If the unit cannot correctly read the frame mode on the tape, it will use the frame mode that was set in the last position on the tape that the unit can read correctly. If you remove the cassette, the mode of the last position that the unit was able to read correctly is cleared and the non-drop frame mode is set when recording is restarted from the same position.If [TC MAKE] is set to [PRESET], the non-drop frame mode is set.) **DF :** Selects the drop frame mode. **NDF :** Selects the non-drop frame mode. **Note** When [60i/50i SEL] is set to [50i], the unit operates as a 50i specification model. Therefore, the time code is set to the non-drop frame mode. Even if 60i signals are input to i HDV/DV jack when [60i/50i SEL] is set to [50i], the time code generated by the unit is in the non-drop frame mode regardless of [TC FORMAT] setting. To set the time code in the drop frame mode, set [60i/50i SEL] to [60i]. As a result, [TC FORMAT] setting will return to the status before [60i/50i SEL] menu was set to [50i].

OTHERS menu

<table>
<tr><th>Icon/Menu</th><th>Submenu</th><th>Setting</th></tr>
<tr><td rowspan="3">OTHERS</td><td>ASSIGN BTN
<i>(pages 11, 12, 14)</i></td><td>Assigns a function other than the default functions to ASSIGN buttons (INDEX (A1) button, RESET (A2) button, AUDIO DUB (A3) button).
The available functions of each ASSIGN button are as listed below.
<table>
<tr><th>INDEX (A1) button</th><th>RESET (A2) button</th><th>AUDIO DUB (A3) button</th></tr>
<tr><td>INDEX WRITE [a]</td><td>COUNTER RESET [a]</td><td>AUDIO DUB [a]</td></tr>
<tr><td colspan="3">HDV → DV CONV [c]</td></tr>
<tr><td colspan="3">HDMI/CMPNT [c]</td></tr>
<tr><td colspan="3">END SEARCH</td></tr>
<tr><td colspan="3">DATA CODE [b]</td></tr>
<tr><td colspan="3">ALLSCAN MODE [c]</td></tr>
<tr><td colspan="3">COLOR BAR [c]</td></tr>
<tr><td colspan="3">SEARCH SELECT [b]</td></tr>
<tr><td colspan="3">SEARCH + [b]</td></tr>
<tr><td colspan="3">SEARCH – [b]</td></tr>
<tr><td colspan="3">COUNTER SIZE [c]</td></tr>
<tr><td colspan="3">COUNTER COLOR [c]</td></tr>
<tr><td colspan="3">FF/REW SPEED [c]</td></tr>
</table>
a) Default setting
b) Same functions as on REMOTE COMMANDER
c) The above settings can be set with the menu on the unit. For details, refer to the menu items.
END SEARCH: The last five second portion recorded on a tape is played back and stopped. Use END SEARCH to check the last picture recorded. Once you eject the tape from the unit, you cannot use this function.

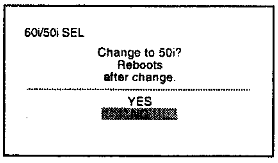
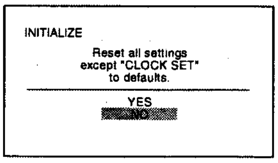
Notes
• The default functions on each ASSIGN buttons can not be assigned to other ASSIGN buttons.
• If you assign other functions, A1, A2, and A3 will be displayed on left corner of the Data display screen.</td></tr>
<tr><td>LANGUAGE</td><td>You can select the desired language on Data display screen. You can choose Simplified English if your native language is not available among the options.</td></tr>
<tr><td>COMMANDER
<i>(page 24)</i></td><td>Selects the control device.
WIRELESS: Enables the control of Remote Commander.
CONTROL S: Enables the control of the remote control unit DSRM-10 (not supplied) connected to CONTROL S IN jack. (Remote Commander is disabled.)

Notes
• The unit accepts signals from any Sony Remote Commander whose command mode is set to VTR4, not only the supplied one. To disable the control from any Remote Commander, set this item to CONTROL S.
• You can use the DSRM-20 (no longer manufactured: not supplied).</td></tr>
</table>

(Continued)

Operating the Menus

Icon/Menu	Submenu	Setting
OTHERS	PB YNR	Selects the noise reduction level for the luminance signals when a tape is played. **OFF**: No noise reduction **LOW** : Low noise reduction **HIGH** : High noise reduction **Notes** • When you use noise reduction, there may be an afterimage depending on the condition of the picture. • Noise reduction is also available with pictures output from HDV/DV jack. Use caution when dubbing and editing a picture in HDV/DV.
	PB CNR	Selects the noise reduction level for the chrominance signals when a tape is played. **OFF**: No noise reduction **LOW** : Low noise reduction **HIGH** : High noise reduction **Notes** • When you use noise reduction, there may be an afterimage depending on the condition of the picture. • Noise reduction is also available with pictures output from HDV/DV jack. Use caution when dubbing and editing a picture in HDV/DV.
	BEEP	Selects whether or not the unit beeps. **ON**: Enables the beep. **OFF** : Disables the beep.
	CLOCK SET	**1** Press ⇧/⇩ buttons to adjust the number, then press ⇦/⇨ buttons to set the month, day, hour, and minute. **2** Press EXEC button to execute. **Notes** • 12:00 AM stands for midnight and 12:00 stands for noon when [TIME DISPLAY] is set to [12H]. • If you do not use the unit for 3 months or more, the built-in rechargeable battery will become completely discharged, and the settings of the day and the time may be cleared from the memory. In this case, charge the built-in rechargeable battery and set the clock again *(page 92)*.
	HOURS METER *(page 92)*	Displays the accumulated time counts (by the digital hours meter) in units of 10 hours or 10 counts. **OPERATION** : Power on duration **DRUM RUN:** Drum rotation duration **TAPE RUN:** Tape run duration **THREADING:** Tape unthreading count
	AC ON MODE	Switches the state into which the unit goes when the unit is connected to the AC outlet. **STANDBY**: Makes the unit go into the standby mode. **ON:** Turns the unit on.
	AUTO STANDBY	Selects whether the unit goes into the standby mode or not, if the unit has been in the stop mode and no key operations have been attempted for more than one hour. **OFF**: Leaves the unit in the stop mode. **ON:** Makes the unit go into the standby mode.

Icon/Menu	Submenu	Setting
OTHERS	60i/50i SEL *(page 7)*	Switches to 1080/60i (NTSC) or 1080/50i (PAL). **1** Press ⇧/⇩ buttons to select [YES], then press EXEC button.  60i/50i SEL Change to 50i? Reboots after change. **2** Press ⇧/⇩ buttons to select [YES] again, then press EXEC button.
	INITIALIZE	Resets the menu to preset settings except CLOCK SET. **1** Press ⇧/⇩ buttons to select [YES], and then press EXEC button.  INITIALIZE Reset all settings except "CLOCK SET" to defaults. **2** Press ⇧/⇩ buttons to select [YES] again , then press EXEC button.

Chapter 6

Maintenance

Troubleshooting

Please check the following before contacting your Sony dealer.

General Operation Troubles

Symptom	Cause/Remedy
A menu item is not available.	• The KEY INH switch is set to ON. → First, set the switch to OFF, then adjust the menu. • There are menus that cannot be used depending in [IN/OUT REC] menu setting. → Change [IN/OUT REC] menu settings *(page 67)*. • Some menu items are only available in EE mode or playback mode. → Set the unit to EE mode or playback mode. • Some menu items are only available when the tape is inactive. • There are some menus you cannot use without setting the clock.
Some menu item settings change accidentally.	• You have pulled out the power cord during a menu operation or LCD monitor brightness adjustment. → Adjust the menu again. To prevent this incident recurring, do not pull out the plug while adjusting the menu or the brightness of LCD monitor.
The unit operates by itself.	• [COMMANDER] in [OTHERS] menu is set to WIRELESS and a Sony Remote Commander whose command mode is set to VTR4 is operated near the unit. → Set [COMMANDER] to [CONTROL S]. • When TIMER switch is set to REPEAT and [START TIME] of [CUSTOM REPEAT] in [VTR SET] menu is set to [ON], the unit starts to repeat playbacks at the start time you have set. → Set TIMER switch to OFF, or turn [START TIME] to [OFF].
The supplied wireless Remote Commander does not work.	→ Set [COMMANDER] in [OTHER] menu to [WIRELESS].
Even though the settings on the unit are correct, you cannot make the unit record using the Remote Control Unit DSRM-10 (not supplied).	→ On the Remote Control Unit DSRM-10, press PLAY button while holding REC button down.
Even though KEY INH switch is set to ON, the unit responds to operations input using Remote Commander.	• Setting KEY INH switch to ON does not disable Remote Commander. To disable the control of the Remote Commander, set [COMMANDER] in [OTHERS] menu to [CONTROL S].

Symptom	Cause/Remedy
Whenever you connect the unit to an AC outlet, the unit turns on automatically.	• [AC ON MODE] in [OTHERS] menu is set to [ON]. → Set [AC ON MODE] to [STANDBY]. • There is a cassette inside the unit and TIMER switch is set to REPEAT or REC. → Set TIMER switch to OFF.
No picture on LCD monitor.	• [LCD BLACK] in [DISPLAY SET] menu is set to [ON]. → Set it to [OFF]. • With an analog connection, the current setting of [60i/50i SEL] in [OTHERS] menu is not appropriate. → Set it to the appropriate position for the device you are using.

Power sources

Symptom	Cause/Remedy
The power cannot be turned on.	• AC power cord is disconnected. → Connect the AC power cord. • KEY INH switch is set to ON. → Set the switch to OFF.
The unit will not operate even if the power has been turned on.	• KEY INH switch is set to ON. → Set the switch to OFF. • Moisture condensation has occurred *(page 91)*. • The cassette is not inserted straight. → Eject and reinsert it straight. → Disconnect the power supply and then reconnect it after about 1 minute. If the unit does not operate even after you reconnect the power, use a sharp-tipped ballpoint pen or similar tool to press RESET button. When you press RESET button, all settings including the date, time, and 60i/50i are initialized.

Cassette tapes

Symptom	Cause/Remedy
The cassette cannot be inserted.	• There is moisture condensation on the head drum. → With the unit powered on, wait more than one hour. • The cassette is not inserted straight. → Eject and reinsert it straight. • Another cassette has been loaded already. → Remove the cassette and insert the one you want to load.
It takes time to eject the cassette.	• This is not a malfunction. → The unit ejects the cassette slowly to protect the tape. While the cassette is being ejected, ▭ (cassette) indicator blinks.
A cassette tape cannot be removed.	→ Check whether the power supply is connected properly.
The cassette tape is not ejected when you press EJECT button.	• Moisture condensation has occurred in the unit *(page 91)*.

(Continued)

Symptom	Cause/Remedy
The cassette memory data and title are not displayed when using a cassette tape with the cassette memory function.	• The unit does not support the cassette memory function and therefore such data is not displayed.
The remaining tape time is not displayed.	→ To always display the remaining tape time, set [▣ REMAINING] in [DISPLAY SET] menu to [ON].

Output/Playback

Symptom	Cause/Remedy
Cannot playback.	→ If a tape has reached its end, rewind the tape.
Cannot playback in reverse at various speeds.	• The unit cannot play back a tape recorded in HDV format in the reverse direction at various speeds *(page 37)*.
Horizontal lines are displayed on an image. An image has block noise. An image is blurred or not displayed.	• The video heads are dirty. → Clean the video heads using the supplied cleaning cassette. • A damaged tape is loaded. → Remove the cassette and insert another one. • You have tried to make the unit play back a tape recorded in LP mode of DV format. → The unit can play back only tapes recorded in HDV, DVCAM format or in SP mode of DV format. A tape recorded in LP mode of DV format cannot be played back on the unit.
No picture is output via i HDV/DV jack.	→ Reconnect the i.LINK cable (not supplied). • INPUT SELECT switch is set to a position other than HDV/DV. → Set the switch to HDV/DV.
EE picture and EE sound are not output.	• [EE/PB SEL] in [IN/OUT REC] menu is set to [PB]. → Set [EE/PB SEL] to [EE]. • The setting of INPUT SELECT switch does not match the signal input. → Set the switch according to the signal input.
The audio breaks up.	• A damaged tape is loaded. → Remove the cassette and insert another one. • The video heads are dirty. → Clean the video heads using the supplied cleaning cassette. • You have tried to make the unit play back a tape recorded in LP mode of DV format. → The unit can play back only tapes recorded in HDV, DVCAM or DV (SP) format. A tape recorded in LP mode of DV format cannot be played back on the unit.
Duplication does not function.	• Check the STOP/CAUTION No. and the warning messages displayed on LCD monitor. Take the appropriate action *(See page 59)*.
Cannot perform a date search and index search.	• There is a portion with no recording at the beginning or in the middle of a tape. This is not a malfunction.
The time code is not reset to "00:00:00:00" after rewinding a tape to the recording starting point.	• The time code is not displayed correctly at the starting point of recording. This condition, however, is not a malfunction. When you restart playback, the time code and images are displayed correctly from the starting point.

Symptom	Cause/Remedy
A user bit is not displayed correctly during fast-forward/rewind.	• When input video signals without a user bit are recorded while HDV is input to i.LINK, the user bit is not displayed correctly. Either "— — — —" or "00 00 00 00" is displayed during playback and fast-forward/rewind, respectively.
"–– –– ––" appears on the date display *(page 36)*.	• The tape has been played back without setting the date and time. → Set the date and time. • The tape portion being played back has no recording. • If there is a scratch or noise on the tape, the data code cannot be read.
Although the HDMI cable or component video cable is connected properly to a television set or monitor to play back a tape, no image or audio is output.	→ Use the correct setting for [HDMI/CMPNT] in [VIDEO OUT] in [IN/OUT REC] menu in accordance with the equipment to be connected. • No audio is output from COMPONENT OUT jacks. → Connect also an audio cable.
When you connect the unit to a 4:3 television set, the displayed image appears flattened.	→ When you output from HDMI OUT jack and COMPONENT OUT jacks, set [HDMI/CMPNT] and [DOWN CONVERT] of [VIDEO OUT] in [IN/OUT REC] menu correctly before play back. When you output from i HDV/DV jack, set [HDV → DV CONV] and [DOWN CONVERT] of [i.LINK SET] in [IN/OUT REC] menu correctly before play back. When you output from S VIDEO jack and VIDEO jack, set [DOWN CONVERT] of [VIDEO OUT] in [IN/OUT REC] menu correctly before play back. → DVCAM/DV tape images recorded in the wide mode are not displayed properly. Use a widescreen-compatible monitor.
Even though [HDV/DV IN TC] in [TC/UB SET] menu is set to [EXTERNAL], the time code of the input i.LINK signal is not recorded.	• The i.LINK signal output from the digital non-linear editing controller does not include a time code. → Confirm that the editing software you are using is capable of outputting a time code. • INPUT SELECT switch is not set to HDV/DV. → Set it to HDV/DV.
After playing at 1/10 of normal speed in forward or reverse for more than 1 minute, normal playback forward starts.	• To protect a tape, the unit is set to start normal playback after playing at 1/10 of normal speed in forward or reverse for more than 1 minute. → Play back the tape at 1/3 of normal speed in forward or reverse.
Playback pause mode is released and the unit goes into the stop mode.	• To protect the tape, the unit is set to go into the stop mode after the playback pause mode continues for a certain period. → Set [FROM STILL] in [VTR SET] menu to [STEP FORWARD]. If you do so, the tape will forward by one frame for each time interval set in [STILL TIME].
Playback pause mode is released and the tape forwards for each preset time interval.	• To protect the tape, the unit is set to forward the tape after the playback pause mode continues for a certain period. → Set [FROM STILL] in [VTR SET] menu to [STOP]. If you do so, the unit goes into the stop mode after the playback pause mode continues for the interval set in [STILL TIME].
After the unit has been left in the stop mode and no key operations have been attempted for more than one hour, the unit goes into the standby mode (the unit's power turns off).	• [AUTO STANDBY] in [OTHERS] menu is set to [ON]. → Set [AUTO STANDBY] to [OFF].
The pause mode of playback, recording, or audio dubbing is released automatically.	• To protect the tape and the video heads, the unit goes into the stop mode after the pause mode of recording, audio dubbing, or duplicating continues for more than 3 minutes. → To maintain the pause mode, set [FROM REC P] in [VTR SET] menu to [REC PAUSE].

(Continued)

Troubleshooting

Symptom	Cause/Remedy
When the tape is rewound to its beginning, the playback automatically starts.	• TIMER switch is set to REPEAT. → Set TIMER switch to OFF. • You pressed PLAY button while holding REW button down. → If you do this, the unit rewinds the tape to its beginning and begins playback *(See page 15).*
During playback, the unit starts rewinding suddenly.	• TIMER switch is set to REPEAT. → When TIMER switch is set to REPEAT, the unit starts rewinding at the moment when a signal for index search or a blank portion is detected. Set TIMER switch to OFF.
When the tape reaches its end, rewinding starts automatically.	• TIMER switch is set to REPEAT. → When TIMER switch is set to REPEAT, the unit starts rewinding at the moment when the end of the tape is detected. Set TIMER switch to OFF.
The unit does not function as part of a digital non-linear editing system.	• INPUT SELECT switch is set to a setting other than HDV/DV. → Set it to HDV/DV. • The editing controller or the editing software is not compatible with the unit. → Refer to the instruction manuals of the controller or the software and consult their manufacturers.
Although the i.LINK cable is connected, the image from an external equipment is not displayed.	→ Disconnect and then reconnect the i.LINK cable correctly. • INPUT SELECT switch is set to a setting other than HDV/DV. → Set it to HDV/DV.
No image is displayed even though the video cable is connected correctly.	• There are output restrictions for some [HDMI/CMPNT] settings of [VIDEO OUT] in [IN/OUT REC] menu. For details, *see page 68.* • INPUT SELECT switch setting does not match the cable connected to the unit. → Set INPUT SELECT switch to S VIDEO or VIDEO to match the cable connection.
The image looses color or is distorted when you play back the tape on a television set or monitor connected to the unit.	→ Connect the unit to a television set or monitor that is compatible with its [60i/50i SEL] format. → Set [60i/50i SEL] in [OTHERS] menu, according to the signal-format (page 79).
2/2-ST is displayed on the screen.	• This icon is displayed when you playback a tape recorded with 4-channel microphone recording on another device. This unit does not support 4-channel microphone recording. (The icon is displayed when you play back a tape recorded with 4-channel microphone in DVCAM or DV (SP) format. However, it is not displayed during playback of a tape recorded with 4-channel microphone in HDV format.)

<table>
<tr><th>Symptom</th><th>Cause/Remedy</th></tr>
<tr><td>The output from S VIDEO OUT jack and VIDEO OUT jack is different from [DOWN CONVERT] setting of [VIDEO OUT] in [IN/OUT REC].</td><td>The output from S VIDEO jack and VIDEO jack is set as follows.
• When the playback format is set shown below, the output from S VIDEO jack or VIDEO jack is fixed in EDGE CROP.
<table>
<tr><th colspan="2">Menu item</th><th>Setting</th></tr>
<tr><td colspan="2">Playback format</td><td>HDV (HDV1080i)</td></tr>
<tr><td rowspan="2">[VIDEO OUT] in [IN/OUT REC]</td><td>[DOWN CONVERT]</td><td>SQUEEZE or LETTER BOX</td></tr>
<tr><td>[HDMI/CMPNT]</td><td>480p/480i, 576p/576i</td></tr>
<tr><td rowspan="2">[i.LINK SET] in [IN/OUT REC]</td><td>[HDV → DV CONV]</td><td>DVCAM or DV SP</td></tr>
<tr><td>[DOWN CONVERT]</td><td>Set to EDGE CROP</td></tr>
</table>
• When the playback format is set shown below, the output from S VIDEO jack or VIDEO jack is fixed in LETTER BOX.
<table>
<tr><th colspan="2">Menu item</th><th>Setting</th></tr>
<tr><td colspan="2">Playback format</td><td>HDV (HDV1080i or HDV720p)</td></tr>
<tr><td>[VIDEO OUT] in [IN/OUT REC]</td><td>[HDMI/CMPNT]</td><td>480i, 576i, 480p/480i, 576p/576i</td></tr>
<tr><td colspan="2">[ALLSCAN MODE] in [DISPLAY SET]</td><td>ON</td></tr>
</table>
</td></tr>
</table>

Recording/Dubbing

Symptom	Cause/Remedy
Whenever you connect the unit to an AC outlet, the unit automatically starts recording.	• TIMER switch is set to REC. → When TIMER switch is set to REC, the unit starts recording whenever the power is connected. Set TIMER switch to OFF.
Even though KEY INH switch is set to ON, the unit starts recording/playback by itself.	• TIMER switch is set to REPEAT or REC. → TIMER switch setting has a higher priority than KEY INH switch setting. Set TIMER switch to OFF. • When [COMMANDER] in [OTHERS] menu is set to [WIRELESS], the unit responds to signals from Remote Commander even though KEY INH switch is set to ON. → Set [COMMANDER] to [CONTROL S].
No picture is output via ℹ HDV/DV jack.	→ Reconnect the i.LINK cable (not supplied). • INPUT SELECT switch is set to a position other than HDV/DV. → Set the switch to HDV/DV. → Set [HDV/DV SEL] in [IN/OUT REC] menu correctly.

(Continued)

Troubleshooting

Symptom	Cause/Remedy
When you set AUDIO INPUT LEVEL switch: • You do not know how to adjust the input level. • The recorded level is too low. • The recorded sound is distorted.	Confirm the level of the sound output from the player by referring to the player's instruction manual. According to that output level, set AUDIO INPUT LEVEL switch on the rear panel of the unit so as to obtain an optimum level. If you are not clear about the player's output level, try the following procedures. ① Specify the output level by types of audio output connectors available on the player. • If the player is equipped with phono jacks: –10. • If the player is equipped with XLR connectors: +4 or –2. ② Set AUDIO INPUT switch on the front panel to AUTO and play back the tape which you intend to use for playback. When the playback audio level is at its maximum, if the audio levels meters exceed 0 dB, set AUDIO INPUT LEVEL switch to the lower step (+4). Either, set AUDIO INPUT switch to MANU and turn AUDIO REC LEVEL control knobs to adjust the recording level. The recorded sound at the portion where the meters exceed 0 dB will be distorted.
Audio dubbing cannot be done. Audio dubbing is interrupted.	• You are trying to dub the sound onto an HDV or DV-formatted tape. → Sounds can be dubbed only onto a DVCAM-formatted tape (recorded) in the 32 kHz audio mode (4-channel). If the unit detects the following, audio dubbing will automatically abort, an alarm message will be superimposed on LCD monitor and on an external monitor. – A blank portion – A section recorded in other than 32 kHz audio mode (4-channel) – A portion recorded in other than DVCAM format – A tape displayed as NS. • You have tried to dub the sound onto channels 1/2. → Only channels 3/4 can be used for dubbing. You cannot dub the sound onto channels 1/2.
No sound or undesired sound is output from HDMI OUT jack, AUDIO OUT jacks, or PHONE jack.	• When the audio mode is set to 32 kHz (4-channel), you can select the audio channel to output the sound using the AUDIO OUTPUT SELECT selector on the front panel. Check the setting of [AUDIO MONI] in [AUDIO SET] menu.
Cannot hearCH3 and CH4 audio.	→ Set AUDIO OUTPUT SELECT switch to MIX or CH-3/4.
If an i.LINK cable is connected when you edit the dubbing, the monitor does not display any image.	→ Use the correct setting for [HDV/DV SEL] in [IN/OUT REC] menu in accordance with the equipment to be connected.
The unit does not function as part of a digital non-linear editing system. The functions on the unit do not operate.	• The INPUT SELECT switch is set to a setting other than HDV/DV. → Set it to HDV/DV. • The editing controller or the editing software is not compatible with the unit. → Refer to the instruction manuals of the controller or the software and consult their manufacturers.

Warning indicators and messages

Self-diagnosis display/Warning Indicators

The following alarm indicators may appear on LCD monitor or an external monitor. For further information about each symptom and recovery method, see the relevant page indicated in the parentheses.

Message/Alarm Indicator	Cause/Corrective Action
C:□□:□□/E:□□:□□ (Self-diagnosis display)	If an error still recurs after you retry the corrective actions several times, contact Sony Customer Service or your place of purchase. **C:21:□□** → Condensation has occurred. Remove the cassette and insert it again after approximately 1 hour *(page 91)*. **C:22:□□** → The video head is dirty. Use a cleaning cassette to clean the head *(page 89)*. **C:31:□□/C:32:□□** → Symptoms other than the above are occurring. Insert a cassette again and retry the operation. Do not take this action, however, if there is negligible condensation in the unit *(page 91)*. → Unplug the power cord, plug it in again, and then retry the operation. → Replace the tape.
▣ (Moisture condensation warning)*	→ Remove the cassette, unplug the power cord, and leave the unit for approximately 1 hour *(page 91)*.
📼 (Warning indicator pertaining to the tape)	**The icon blinks slowly.** • The remaining tape time is less than 5 minutes.
⏏ (Eject cassette warning)*	**The icon blinks rapidly.** • Condensation has occurred *(page 91)*. • The self-diagnostics message is displayed *(page 87)*.

* An alarm beep will be emitted when an alarm indicator or message is displayed *(page 78)*.

Warning indicators and messages

Alarm Messages

The following alarm messages will appear together with the alarm indicators. Take corrective action according to the displayed message.

Item	Message	Cause/Corrective Action
Moisture condensation	▣ ⏏ Moisture condensation. Eject the cassette.	→ *See page 91 for details.*
	▣ Moisture condensation. Turn off for 1H.	→ *See page 91 for details.*
Cassette/Tape	📼 Insert a cassette.	→ *See page 31.*
	⏏ Reinsert the cassette.	• Check for damage on a tape or other irregularities.
	📼 ⏏ The tape is locked -check the tab.	→ *See page 30.*
	📼 The tape has reached the end.	—
Audio dubbing	Cannot add audio. INPUT SELECT is set to HDV/DV	—
	Not recorded in DVCAM mode. Cannot add audio.	—
	Cannot add audio.	• You cannot add audio unless the recorded audio format is 32 kHz (4-channel, 12 bit). Make sure that [60i/50i SEL] in [OTHERS] menu is set correctly..
	Cannot add audio on the blank portion of a tape.	—
	HDV recorded tape. Cannot add audio.	—
	Cannot add audio. "HDV/DV SEL" is set to HDV.	—
Others	Cannot record due to copyright protection.	—
	Change to correct tape format.	• This is an unsupported format and cannot be played back.
	No output image in "HDV/DV SEL". Change format.	Stop playback or signal input, or change [HDV/DV SEL] setting *(page 67).*
	⊗ 📼 Dirty video head. Use a cleaning cassette.	→ *See page 89.*
	Unplug power cable.	—
	Reinsert the cassette.	—
	Invalid input signal.	The signal that has been input to the unit is invalid. Check the input signal.
	Power voltage error.	—

Notes on Use

Notes on the Videocassette Recorder

Do not use the unit in a place subject to direct sunlight or heat sources

If you do, its cabinet, mechanical parts, etc., may be damaged.

Do not place the unit in humid places

Do not place the unit in places where they may be exposed to water-splash or to humidity. Do not place water-filled containers or vases on the unit. Doing so may cause the unit malfunction.

Do not use the unit in an extremely hot place

If the unit is left in a car parked with the windows closed (especially in summer), its cabinet, mechanical parts, etc., may be damaged or it may not work correctly.

If the unit is brought directly from a cold to a warm location

Moisture may condense inside the unit and cause damage to the video heads and tape. If you use the unit in a place subject to direct cold currents from an air conditioner, moisture may also condense inside the unit.

Do not place a heavy object on the unit

The cabinet, mechanical parts, etc., may be damaged, or the unit may not work correctly.

Do not handle the unit roughly

Avoid rough handling or mechanical shock to the unit.

To avoid damaging the cabinet's finish

Plastic is often used for the surface finishing of the unit. Do not spray a volatile solvent such as an insecticide toward the cabinet or place rubber or vinyl products on the cabinet for a long time. If you do, the finish of the cabinet may be damaged or the coating may come off.

Do not clean the cabinet with thinner or benzine

The cabinet may be damaged or its coating may come off. When you use a chemical-impregnated cloth, use it according to its directions.

Clean the cabinet with a soft dry cloth

When the cabinet is very dirty, clean it with a soft dry cloth lightly moistened with a mild detergent solution and finish it with a dry cloth.

Do not put magnetic objects close to the unit

Magnetic fields may damage the recording.

To prevent electromagnetic interference caused by radio communication equipment such as cellular phones, transceivers, etc.

The use of the radio communication equipment such as cellular phones or transceivers near the unit may cause a malfunction and can affect the audio/video signals. Cellular phones or transceivers near the unit should be switched off.

Do not use the unit in an area exposed to radiation

A malfunction may occur.

Checking the video heads every 1000 hours

A VCR is a high-precision piece of equipment that records and plays back the picture recorded on a magnetic tape. In particular, the video heads and other mechanical parts may become dirty or worn. To maintain a clean picture, we recommend maintenance every 1000 hours, even though the conditions of use may differ depending on temperature, humidity, dust, etc.

About connecting other equipment

When you connect the unit to another equipment or a computer using an i.LINK cable, confirm the direction of the jack. If you forcibly insert the jack, the terminal may be damaged or cause the unit to malfunction.

Cleaning of the Video Heads

With clogged video heads, the unit cannot record properly. Clean the video heads to prevent noise on the recorded picture or audio. For cleaning, use the supplied cleaning cassette.

Before recording an important event

The unit cannot record properly with the clogged video heads. To ensure normal recording and clear pictures and sound, clean the video heads before recording an important event.

(Continued)

Notes on Use

Every 50 hours

If you repeat the tape transport operation, the video heads will become dirty and coated with fine dirt or dust. Clean the heads every 50 hours.

After using a tape prone to clog the heads

After using such a tape causes the symptoms illustrated below, clean the heads.

When the symptoms caused by clogged video heads appear

Even if you clean the heads periodically, clogging of the heads may occur anyway. Clean the heads when:
- mosaic-pattern noise appears on the playback picture.
- the playback picture freezes.
- a part of the playback picture does not move.
- playback pictures do not appear.
- playback audio is interrupted.
- "⊗ 📼 Dirty video head. Use a cleaning cassette." appears during recording.

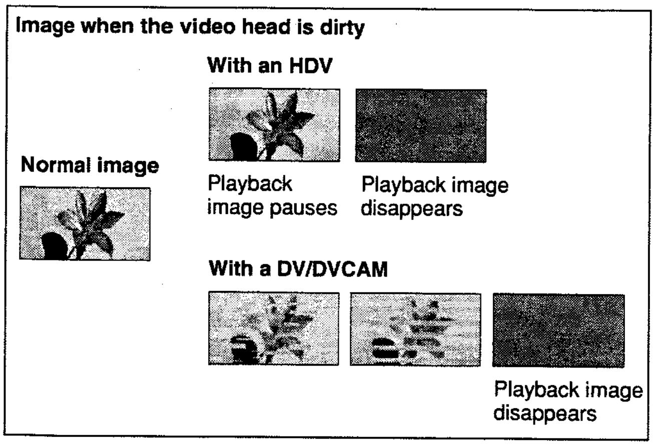


Image when the video head is dirty
With an HDV
Normal image
Playback image pauses
Playback image disappears
With a DV/DVCAM
Playback image disappears

To use the cleaning cassette

Clean the video head by playing the cleaning cassette for ten seconds.

* If the playback image continues to be stationary or any of the symptoms on the above remain even after cleaning with the cleaning cassette, there may be a problem with the tape. Avoid using that tape.

For details, refer to your cleaning cassette's instruction manual.

Note

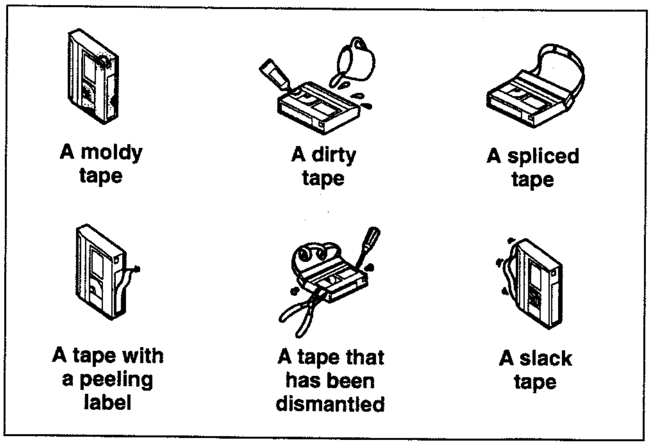
Using the unit as below will make the video head dirty.
- Subjecting the unit to temperature change or high humidity.
  →Condensation occurs. *See page 91.*
- Using a damaged tape.
- Using the unit for a long time.
- Using the unit where there is a lot of dirt, dust, or sand.
- Leaving a tape in the unit for a long time.

Cleaning cassettes are replaceable. After using the supplied cleaning cassette for the specified number of times, buy a cleaning cassette for replacement.

After prolonged use, the video heads may become worn out. If optimum picture quality is not restored even after you have cleaned the video heads with the cleaning cassette, the video heads may have worn out. In that case, you have to replace the video heads with new ones. Please consult your Sony dealer.

Notes on the Video Cassettes

Note that using a tape such as those below can damage the unit.

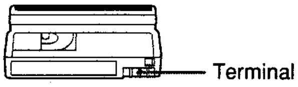

A moldy tape
A dirty tape
A spliced tape
A tape with a peeling label
A tape that has been dismantled
A slack tape

Using cassettes

- When using a cassette for the first time we recommend that you run the tape for about five seconds before recording.
- When using a cassette that has been stored for a long time we recommend that you fast-forward and rewind it for some time. This will correct any winding irregularity in the cassette.
- Do not repeatedly insert and remove a cassette without running it. The tape may become slacked or damaged.

Cleaning the terminal

If the gold-plated terminals of a cassette become dirty, or dirt accumulates on the terminals, the correct remaining tape time may not be displayed.
Clean the terminal with a swab once every ten times you eject a cassette.



When affixing a label to the cassette

Be sure to affix a label only on the correct location so as not to cause malfunction of the unit.

Storing cassettes

- After using the tape rewind it, put it in its case and store vertically. (To prevent picture and sound distortion.)
- Do not store tapes in the following places:
  - Where the temperature gets high (in strong sunshine, inside a car or near a heater)
  - Where there is high humidity
  - In a strong magnetic field (near a TV or speakers)

Notes on LCD Screen

LCD screen is manufactured using high-precision technology. The ratio of effective pixels is 99.99% or more. However, there may be some tiny black points and/or bright points (red, blue, green or white) that constantly appear on LCD screen. These points do not affect the recorded picture in any way.
Do not place the unit with LCD screen pointing toward the sun. Otherwise, the unit may be damaged.

To clean LCD screen

To remove dirt or to clean fingerprints from LCD screen, use an LCD cleaning kit (not supplied). When you use the LCD cleaning kit, do not pour the cleaning liquid directly on LCD. Always soak the liquid in cleaning paper and wipe LCD with this paper.

About Moisture Condensation

If the unit or cassette is brought directly from a cold to a warm location, moisture may condense inside or outside the unit or tape. If you use the tape or video heads in this condition, the tape may adhere to the head drum, and the video heads or the tape may be damaged, or a malfunction may occur.
When condensation occurs, the alarm messages "▣ ⏏ Moisture condensation. Eject the cassette" or "▣ Moisture condensation. Turn off for 1H." appears.
Moisture condensation is likely to occur under the following conditions:

- The unit or cassette is brought from the cold outdoors to a warm indoor location.
- The unit or cassette is brought from the air-conditioned indoors to the hot outdoors.
- The unit is used in a place subject to cold currents from an air conditioner.

When bringing the unit or cassette from a cold place to a warm place or vice versa, put it in a plastic bag and seal the bag tightly. After bringing it into the new place, leave the bag on for more than one hour, and remove the bag when the air temperature inside it has reached the temperature surrounding it.

If moisture condensation occurred

Remove the cassette immediately. While the alarm indicator is displayed, you cannot operate the unit except to press EJECT button.
Turn off the power until the condensation disappears (approximately 1 hour). If the alarm message does not appear when you turn on the unit, and if ▣ or ⏏ does not blink when you insert a cassette and press the video operation button, you can use the unit again.
If there is negligible condensation in the unit, this condensation may not be detected. In that case, the cassette may not be ejected for approximately 10 seconds. This is not a malfunction.

Digital Hours Meter

The digital hours meter keeps cumulative counts of the total operation time, the head drum rotation time, the tape running time and the number of unthreading operations. These counts can be displayed on the menu. Use them as guidelines for scheduling maintenance.
In general, consult your Sony dealer about necessary periodic maintenance checks.

The digital hours meter has the following four display modes and you can check them in [HOURS METER] of [OTHERS] menu (*page 78*).

• OPERATION mode
The cumulative total hours of operating time is displayed in 10-hour increments.

• DRUM RUN mode
The cumulative total hours of drum rotation with tape threaded is displayed in 10-hour increments.

• TAPE RUN mode
The cumulative total hours of tape running time is displayed in 10-hour increments.

• THREADING mode
The cumulative number of tape unthreading operations is displayed in 10-operation increments.

About the Built-in Rechargeable Battery

The unit is provided with a rechargeable battery that retains the date/time and various settings regardless of power-on and power-off. The rechargeable battery is charged as long as the unit is operated. If the period of operating the unit is short, the battery discharges gradually and if it is not used at all for approximately 3 months, the battery will discharge completely. If that case, charge the battery and then start using the unit. If you do not need to record the date and time when the rechargeable battery is not fully charged, you can use the unit in this state.

Charging the rechargeable battery

Connect the unit to an AC output using the power cord for about 24 hours. (The unit does not need to be turned on.)

Notes on the License

ANY USE OF THIS PRODUCT OTHER THAN CONSUMER PERSONAL USE IN ANY MANNER THAT COMPLIES WITH THE MPEG-2 STANDARD FOR ENCODING VIDEO INFORMATION FOR PACKAGED MEDIA IS EXPRESSLY PROHIBITED WITHOUT A LICENSE UNDER APPLICABLE PATENTS IN THE MPEG-2 PATENT PORTFOLIO, WHICH LICENSE IS AVAILABLE FROM MPEG LA, L.L.C., 250 STEELE STREET, SUITE 300, DENVER, COLORADO 80206.

Appendix

Compatibility of HDV, DVCAM, and DV Formats

HDV format is an HD VCR format based on DV format of the globally widespread general consumer digital VCR system. This format has the newly defined data recording specifications for HD signals compressed by MPEG2. It applies the same cassette, tape speed, and track pitch as DV format.
The differences, compatibility, and restrictions in editing of HDV1080i, DVCAM, and DV formats are explained below.

Main differences between HDV1080i, DVCAM, and DV Formats

(The unit and other equipment for professional use may be functionally extended. For details, see the notes below the table.)

Specification	HDV1080i	DVCAM	DV (SP)
Track pitch	10 μm	15 μm	10 μm
Audio sampling frequency	16 bit: 48 kHz	12 bit: 32 kHz 16 bit: 48 kHz	12 bit: 32 kHz 16 bit: 32 kHz, 44.1 kHz, 48 kHz [2]
Audio recording mode [1]	Lock mode	Lock mode	Unlock mode [3]
Time code	Drop frame mode (60i only) [4] No user bits [4]	NTSC: SMPTE time code (DF/NDF, including user bits) PAL: EBU time code (including user bits)	Drop frame mode (NTSC only) [4] No user bits [4]

1) There are two modes for audio signals recording: Lock mode and Unlock mode. In Lock mode, the sampling frequencies of audio and video are synchronized. In Unlock mode, adopted by the consumer DV format, the two sampling frequencies are independent. Lock mode maintains high compatibility with higher formats and offers better digital processing and smooth transition than Unlock mode when you edit audio.
2) The unit cannot record in DV format with 16 bit:32 kHz or 44.1 kHz.
3) The unit has been functionally extended with a function for switching between Lock mode and Unlock mode.
4) The unit has been functionally extended with a function to enable selecting DF/NDF and user bits setting for 60i with HDV or DV (SP) format.

Compatibility of HDV, DVCAM, and DV Formats

Playback compatibility

The compatibility between playback tape format and player is summarized in the table below.

Player Playback tape format	DV format model	DVCAM format model	HDV1080i format model (The unit)
DV	Playback is possible. (Some equipment cannot play a tape recorded in the LP mode.)	Only playback of a tape recorded in SP mode is possible. Some equipment can play a tape recorded in LP mode.	Only playback of a tape recorded in SP mode is possible. Some equipment can play a tape recorded in LP mode. (The unit can play back a DV-formatted tape in SP mode only.)
DVCAM	Playback may be possible on some models.	Playback is possible	Playback is possible
HDV	No playback is possible.	No playback is possible.	Playback is possible*

* The unit can play back for HDV720/30p format, but you cannot output the video signals from i HDV/DV jack.
The unit cannot play back other than HDV1080/60i, HDV1080/50i, such as HDV1080/30F, HDV1080/25F, HDV1080/24F, HDV720/25p, and HDV720/24p format. The unit cannot input/output, record, or play back extended HDV signals. On the unit, you cannot input/output 4-channel audio signals, record or playback in HDV extension.

Cassette compatibility

A DV format cassette tape can be used for HDV. The recording bit rate and recording track pitch on a tape of the HDV1080i system used for HVR-M25U/M25N/M25E/M25P are about 25 Mbps and 10 µm, respectively. The specifications are the same as that of home use DV (SP) tapes. The recording time on an HDV tape is also the same as that of DV (SP).
The track pitch of DVCAM is 15 µm, which is 1.5 times of HDV/DV (SP). Therefore, the recording time using DVCAM recording on a same tape will be two-thirds of the time available when HDV/DV (SP) recording is used.

Dubbing with S VIDEO or VIDEO jacks

When you use the unit as a recorder to perform dubbing between the unit and another equipment using S VIDEO jack and VIDEO jack, the format to be used for recording is set in accordance with [📼 REC MODE] setting in [IN/OUT REC] menu.

For details, see the following table.

Playback and editing of a tape may be restricted for some dubbing methods. Read Chapter 4 “Dubbing to another equipment using i.LINK jack, Duplication, Audio Dubbing, and Connecting with a Computer” before dubbing a tape.

Some editing software can correctly edit even a tape created in [LOCK MODE]. In that case, select [LOCK MODE] if required.

Recording tapes used when the unit serves as a recorder

Input signal format	**Menu item**		**Recording tape format (AUDIO MODE)**
	📼 REC MODE	**AUDIO LOCK**	
NTSC or PAL	DVCAM	—	DVCAM (LOCK MODE)
	DV SP	LOCK MODE	DV (LOCK MODE)
		UNLOCK MODE	DV (UNLOCK MODE)

—: Setting independent

Compatibility of HDV, DVCAM, and DV Formats

Dubbing with i HDV/DV jack

When you perform dubbing between the unit and digital video equipment connected with the i.LINK cable using the unit as a player, i HDV/DV jack output format is determined in accordance with the playback tape format and menu setting of the unit.
If you use the unit as a recorder, the format of a tape used for recording is determined in accordance with i HDV/DV jack input format and menu setting of the unit. For details, check the following table on page 97.
Playback and editing using this tape may be limited for some dubbing methods. Before dubbing, read Chapter 4 "Dubbing to another equipment using i.LINK jack, Duplication, Audio Dubbing, and Connecting with a Computer."

i.LINK output when the unit is used as a player

Playback tape format	**Menu item**		
		i.LINK SET	
	HDV/DV SEL	**HDV→DV CONV**	**i.LINK output format (AUDIO MODE)**
HDV	AUTO	OFF	HDV (LOCK MODE)
		DVCAM	DVCAM (LOCK MODE)
		DV (SP)	DV (UNLOCK MODE)
	HDV	OFF	HDV (LOCK MODE)
		DVCAM	DVCAM (LOCK MODE)
		DV (SP)	DV (UNLOCK MODE)
	DV	—	No output
DVCAM	AUTO	—	DVCAM (Complies with playback tape)
	HDV	—	No output
	DV	—	DVCAM (Complies with playback tape)
DV	AUTO	—	DV (Complies with playback tape)
	HDV	—	No output
	DV	—	DV (Complies with playback tape)

Notes

- When you play back a tape employed with a copy-protection signal on the unit, recording is prevented to record images from the unit to other equipment.
- You cannot up convert DVCAM(DV) format to HDV format on the unit.
- During playback in HDV, if [DV SP] is selected from [HDV→DV CONV] in [i.LINK SET], AUDIO MODE is fixed to UNLOCK MODE.
- When you play back a tape in DVCAM or DV format, the unit cannot convert between DVCAM and DV format, or switch between LOCK MODE and UNLOCK MODE.

Recording tape when the unit is used as a recorder

i.LINK input format	Menu item		Recording tape format (AUDIO MODE) [3]
	HDV/DV SEL	📼 REC MODE [1]	
HDV	AUTO	—	HDV (LOCK MODE)
	HDV	—	HDV (LOCK MODE)
	DV	—	No recording
DVCAM	AUTO	DVCAM	DVCAM (Complies with input signals)
		DV SP	DV (Complies with input signals)
	HDV	—	No recording
	DV	DVCAM	DVCAM (Complies with input signals)
		DV SP	DV (Complies with input signals)
DV	AUTO	DVCAM	DVCAM [2] (Complies with input signals)
		DV SP	DV (Complies with input signals)
	HDV	—	No recording
	DV	DVCAM	DVCAM [2] (Complies with input signals)
		DV SP	DV (Complies with input signals)

1) When the unit is used as a recorder, the recording format is determined by [📼 REC MODE] setting on [IN/OUT REC] menu if the input signal format is DVCAM or DV.
2) If you duplicate a tape when the unit is set to DVCAM to be used as a recorder, the time code format of the duplicated tape will be partially different from the time code format specified as DVCAM (note, however, that this does not affect editing accuracy in special cases).
3) The unit cannot switch between LOCK MODE and UNLOCK MODE. AUDIO MODE complies with input signals.

Notes

- On the unit, HDV signals input from i.LINK cannot be down converted to DVCAM(DV) for recording.
- If you use the tapes described in 2) above for editing, you may encounter function limitations regardless of the player and recorder formats.
- Some DV video equipment may playback a DVCAM-formatted tape, however the contents cannot be guaranteed. Therefore, even if you use a proper DVCAM-formatted tape for playback, the unit may dub and create a DVCAM-formatted tape. The time code will be partially different from the time code format specified as DVCAM on other DV video equipment.
- You cannot use the unit to record video and audio recorded with copyright protection signals. If you try to record such a video or audio, the message "Cannot record due to copyright protection." appears on LCD monitor. Pictures output from COMPONENT OUT jacks are switched to either 480i or 576i automatically, regardless of the menu you have set on the unit.

Limitations on editing

During editing, you will encounter limitations according to the format differences on a tape dubbed or edited using i HDV/DV jack.
For details, refer to Chapter 4 "Dubbing to another equipment using i.LINK jack, Duplication, Audio Dubbing, and Connecting with a Computer."

About i.LINK

The i HDV/DV jack provided on the unit is an i.LINK-compliant jack. This section describes the i.LINK standard and its features.

What is i.LINK?

i.LINK is a digital serial interface for sending and receiving digital video, digital audio, and other data between the unit and other equipment equipped with an i.LINK terminal. You can also control other equipment using i.LINK.
i.LINK-compatible equipment can be connected using an i.LINK cable. Possible applications are operations and data exchange with various digital AV equipment. When two or more i.LINK-compatible equipment are connected to the unit, operations and data exchange are possible with equipment directly connected to the unit and also with equipment connected to the unit via other equipment.
Note, however, that the method of operation may vary depending on the characteristics and specifications of the equipment to be connected. Also, there are cases where operations and data exchange may not be possible even if the connection is made.

Notes

- Normally, only one device can be connected to the unit using i.LINK cable. When you connect the unit to HDV/DVCAM (DV)-compliant equipment that allows multiple connections, refer to the operating instructions of the equipment to be connected.
- i.LINK is an easy-to-remember term for the IEEE 1394 proposed by Sony, and is a trademark approved by many corporations in Japan and overseas.
- IEEE 1394 is an international standard standardized by the Institute of Electrical and Electronics Engineers.

About the i.LINK baud rate

The maximum baud rate of i.LINK varies depending on the equipment. There are three types.

S100 (Approximately 100 Mbps*)
S200 (Approximately 200 Mbps)
S400 (Approximately 400 Mbps)

The baud rate is listed under "Specifications" in the operating instructions of individual equipment. It may be indicated near the i.LINK interface on some equipment.
The baud rate may vary from the indicated value when the unit is connected to equipment with a different maximum baud rate.

*What is Mbps?
Mbps stands for "megabits per second," or the volume of data that can be sent or received in 1 second. For example, a baud rate of 100 Mbps means that 100 megabits of data can be sent in 1 second.

To use i.LINK functions of the unit

For details on how to perform dubbing when the unit is connected to other video equipment that has an i.LINK jack, *see page 44, 54.*
The unit can also be connected to other i.LINK-compatible equipment made by Sony (i.e., a VAIO series computer) as well as video equipment.
The unit may not be able operate with some i.LINK video equipment such as digital televisions, DVD recorders/players, and MICROMV recorders/players even if they are equipped with i.LINK jack. Before connecting to another equipment, confirm whether this equipment is HDV/DVCAM (DV) compatible.
For details on precautions on connections and whether or not software applications compatible with the unit are available, refer to the operating instructions of the equipment to be connected.

Notes

- When you connect with the i.LINK cable to a computer and the unit, check the direction of the jack. If you forcibly insert the jack, the terminal may be damaged or cause the unit to malfunction.Align ▲ mark of the i.LINK cable with ▼ mark on the unit and insert the i.LINK cable.
- Be sure to connect the i.LINK cable to a computer first and then connect it to the unit. If you connect the i.LINK cable to the unit first, it may cause the unit to malfunction because of static electricity.
- When you connect the unit to equipment equipped with a 6-pin type i.LINK jack, connect the cable to the 6-pin type i.LINK jack first.
- When you connect the unit to equipment equipped with a 6-pin type i.LINK jack using the i.LINK cable, power off the equipment and remove the power cord from the AC outlet before connecting (or disconnecting) the i.LINK cable. If the i.LINK cable is connected (or disconnected) while the equipment power cord is connected to the AC outlet, a high-voltage current (8 to 40 V) output from the i.LINK jack of the equipment flows into the unit and damage it.

About required i.LINK cable

Use a Sony i.LINK cable.

i.LINK and i are trademarks of Sony Corporation.

Specifications

System

Video/Audio recording/playing head system	Rotating dual-head helical scan
Audio recording format (HDV)	MPEG-1 Audio Layer2 16-bit 48 kHz (stereo) Transfer rate 384 kbps
Audio recording format (DVCAM (DV))	12-bit Fs32K (Channel 1/2, Channel 3/4) 16-bit Fs48K (Channel 1/2)
Video signal	1080/60i, NTSC color, EIA standard system 1080/50i, PAL color, CCIR standard system
Usable cassettes	Standard DVCAM cassettes with DVCAM mark Mini DVCAM cassettes with DVCAM mark
Tape speed (HDV)	Approx. 18.812 mm/s
Tape speed (DVCAM)	Approx. 28.218 mm/s
Tape speed (DV)	SP: Approx. 18.812 mm/s
Recording/playback time (HDV)	Approx. 276 min (using PHDV-276DM) Approx. 63 min (using PHDVM-63DM)
Recording/playback time (DVCAM)	Approx. 184 min (using PHDV-276DM) Approx. 41 min (using PHDVM-63DM)
Recording/playback time (DV SP)	Approx. 276 min (using PHDV-276DM) Approx. 63 min (using PHDVM-63DM)

AUDIO jacks

IN	Pin jack: –10/–2/+4 dBu Impedance: Minimum 47 kΩ (kilo ohms), unbalanced Maximum input level: –10: +18 dBu (approx. 6 Vrms) –2: +24 dBu (approx. 12.5 Vrms) +4: +30 dBu (approx. 25 Vrms)
OUT	Pin jack Impedance: Maximum 1 kΩ (kilo ohms) Output level: 47 kΩ (kilo ohms) loading, unbalanced –10 dBu (= full bit –20 dB) 60i system –10 dBu (= full bit –18 dB) 50i system
PHONES	Stereo minijack (ø 3.5), 8 Ω (ohms) loading

VIDEO jacks

IN/OUT	BNC type, unbalanced 1.0 Vp-p (75 Ω (ohms), sync negative) Sync signal: 0.286 Vp-p (60i/NTSC) 0.3 Vp-p (50i/PAL) Burst signal: 0.286 Vp-p (60i/NTSC) 0.3 Vp-p (50i/PAL)

S VIDEO jacks

IN/OUT	Mini DIN 4-pin, unbalanced Luminance signal: 1.0 Vp-p (75 Ω (ohms), sync negative) Sync signal: 0.286 Vp-p (60i/NTSC) 0.3 Vp-p (50i/PAL) Chrominance signal: 0.286 Vp-p (60i/NTSC) (burst, 75 Ω (ohms)) 0.3 Vp-p (50i/PAL) (burst, 75 Ω (ohms))

HDMI OUT jack

Video	Type A (19 pin) 480i, 576i, 480p, 576p, 1080i, 720p
Audio	2 channel liner PCM 48 kHz/16 bits

COMPONENT OUT jacks

OUT BNC type

Output at 480i NTSC

With [BETACAM] selected in [IN/OUT REC] menu

Y: 1.0 Vp-p
(with 0.286 Vp-p sync negative, output impedance 75 Ω (ohms), unbalanced)

Pb/Cb/B-Y, Pr/Cr/R-Y: 0.7 Vp-p
(output impedance 75 Ω (ohms), unbalanced)
(75% color bars with 7.5 IRE setup)

With [SMPTE] selected in [IN/OUT REC] menu

Y: 1.0 Vp-p
(with 0.3 Vp-p sync negative, output impedance 75 Ω (ohms), unbalanced)

Pb/Cb/B-Y, Pr/Cr/R-Y: 0.7 Vp-p
(output impedance 75 Ω (ohms), unbalanced)
(100% color bars with no setup)

Output with other settings

Y: 1.0 Vp-p
(output impedance 75 Ω (ohms), unbalanced)

Pb/Cb/B-Y, Pr/Cr/R-Y: 0.7 Vp-p
(output impedance 75 Ω (ohms), unbalanced)
(100% color bars with no setup)

480i/480p:
Y: with 0.3 Vp-p sync negative

1080i/720p:
Y/Pb/Pr: with 0.6 Vp-p 3-level sync

i HDV/DV jack

i.LINK (IEEE1394, 4-pin connector S100)

Remote control

LANC	Stereo mini-minijack (ø 2.5)
CONTROL S IN	Stereo minijack (ø 3.5)

LCD screen

Picture	6.8 cm (2.7 type)
Total dot number	211 200 dots 960 (Horizontal) × 220 (Vertical)

General

Peak inrush current

Hot switching inrush current, measured in accordance with European standard EN55103-1: 13.0 A (230 V)

Power requirements

HVR-M25U
AC120 V, 60 Hz
HVR-M25N
AC100-240 V, 50/60 Hz
HVR-M25E
AC220-240 V, 50 Hz
HVR-M25P
AC100-240 V, 50/60 Hz

Power consumption (during play back)

12 W

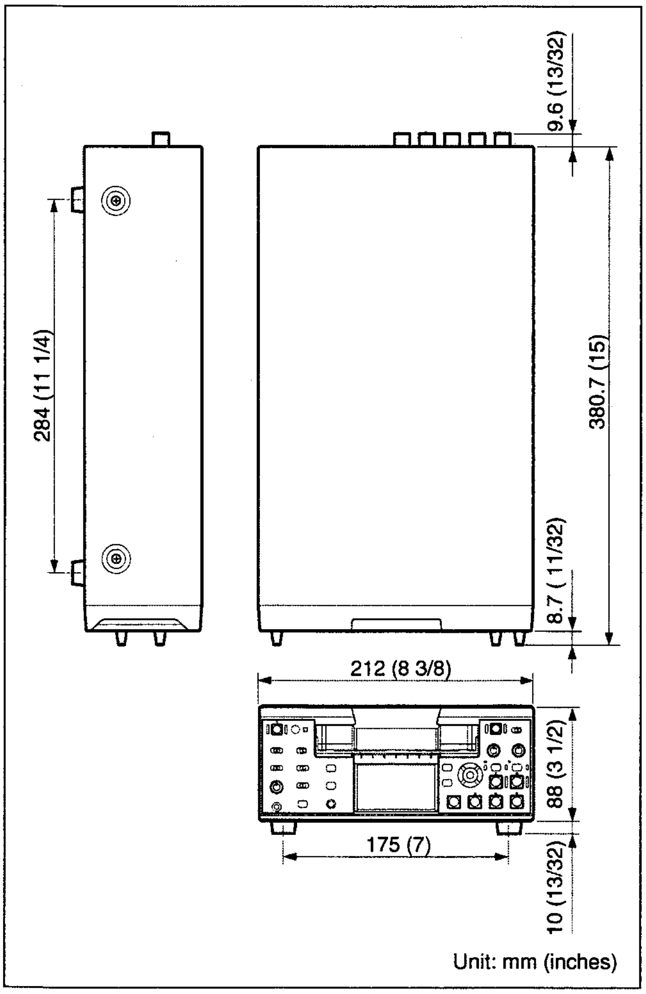
Operating temperature

5 °C to 40 °C (41 °F to 104 °F)

Storage temperature

–20 °C to +60 °C
(–4 °F to +140 °F)

Dimensions	Approx. 212 × 98 × 390.3 mm (8 3/8 × 3 7/8 × 15 3/8 inches) (w/h/d, including projecting parts and controls)


9.6 (13/32)
284 (11 1/4)
380.7 (15)
8.7 (11/32)
212 (8 3/8)
88 (3 1/2)
175 (7)
10 (13/32)
Unit: mm (inches)

Mass	Approx. 4.3 kg (9 lb. 7 5/8 oz.)
Supplied accessories	Remote Commander (1) Power cord (1) Size AA batteries (2) Cleaning cassette (1) Operating Instructions (1)

Design and specifications are subject to change without notice.

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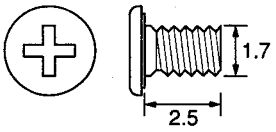
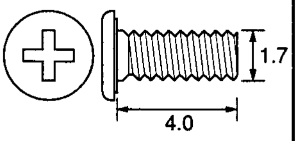
HARDWARE LIST (1/3)

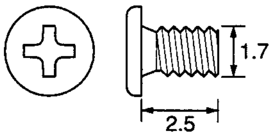
#1: M1.7 X 2.5
(Black)
2-635-562-11



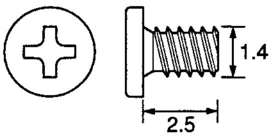
#2: M1.7 X 4.0
(Black)
2-635-562-31



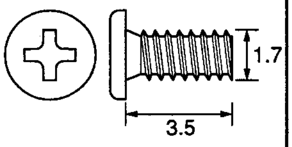
#3: M1.7 X 2.5
(Red)
2-660-401-01



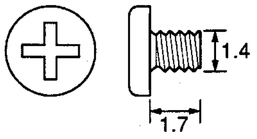
#4: M1.4 X 2.5 (Tapping)
(Dark Silver)
3-348-998-81



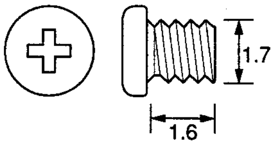
#5: M1.7 X 3.5 (Tapping)
(Black)
3-080-204-01



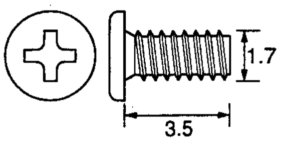
#6: M1.4 X 1.7
(Silver)
2-598-474-01



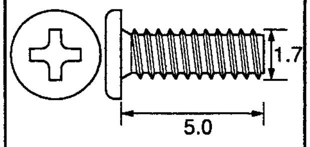
#7: M1.7 X 1.6
(Black)
7-627-552-18



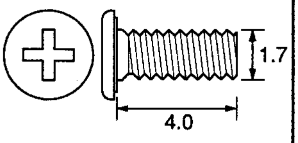
#8: M1.7 X 3.5 (Tapping)
(Silver)
3-078-890-01



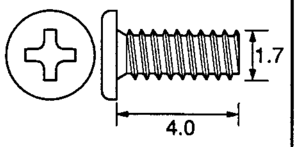
#9: M1.7 X 5.0 (Tapping)
(Silver)
3-078-890-21



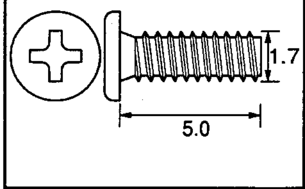
#10: M1.7 X 4.0
(Silver)
2-599-475-31



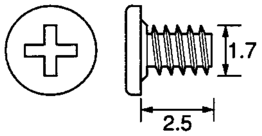
#11: M1.7 X 4.0 (Tapping)
(Silver)
3-078-890-11



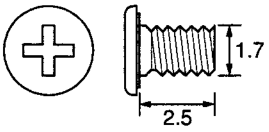
#12: M1.7 X 5.0 (Tapping)
(Black)
3-080-204-21



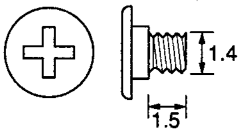
#13: M1.7 X 2.5 (Tapping)
(Silver)
3-085-397-01



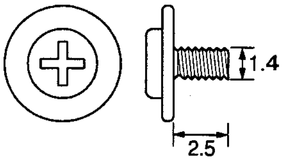
#14: M1.7 X 2.5
(Silver)
2-599-475-11



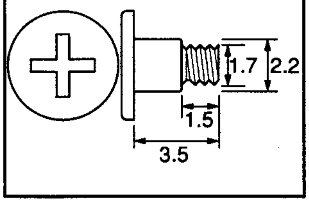
#15: M1.4 X 1.5
(Silver)
3-062-214-01



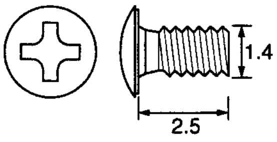
#16: M1.4 X 2.5
(Silver)
2-586-337-01



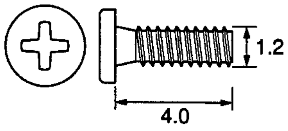
#17: M1.7 X 1.5
(Silver)
2-586-389-01



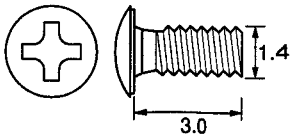
#18: M1.4 X 2.5
(Silver)
2-635-591-21



#19: M1.2 X 4.0 (Tapping)
(Red)
3-086-156-21

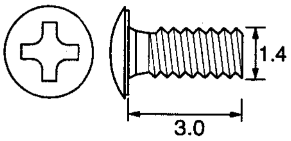


#20: M1.4 X 3.0
(Silver)
2-635-591-31

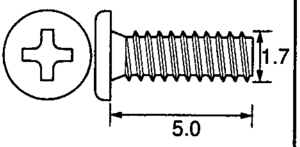


HARDWARE LIST (2/3)

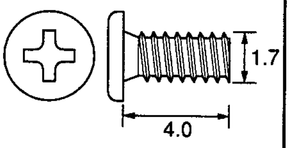
#21: M1.4 X 3.0
(Black)
2-662-396-21



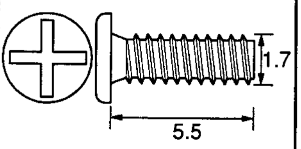
#22: M1.7 X 5.0 (Tapping)
(Silver)
3-083-261-01



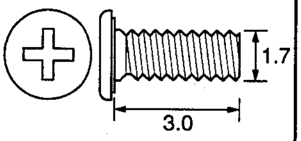
#23: M1.7 X 4.0 (Tapping)
(Black)
3-080-204-11



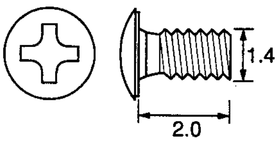
#24: B1.7 X 5.5 (Tapping)
(Black)
4-679-805-11



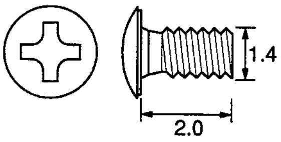
#25: M1.7 X 3.0
(Black)
2-635-562-21



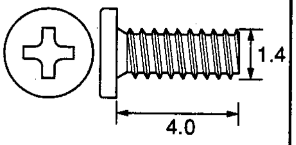
#26: M1.4 X 2.0
(Silver)
2-635-591-11



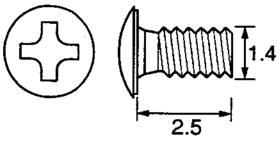
#27: M1.4 X 2.0
(Black)
2-662-396-11



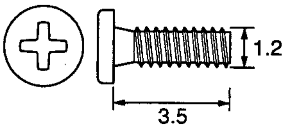
#28: M1.4 X 4.0 (Tapping)
(Dark Silver)
3-348-998-61



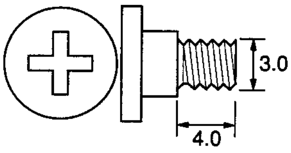
#29: M1.4 X 2.5
(Black)
2-662-396-01



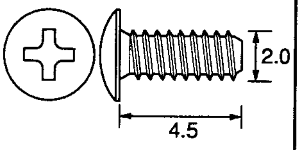
#30: M1.2 X 4.0 (Tapping)
(White)
3-086-156-11



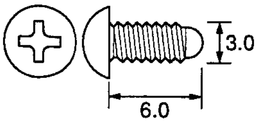
#31: M3.0 X 4.0
(Silver)
2-102-434-01



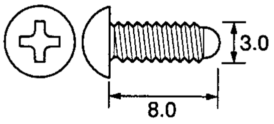
#32: M2.0 X 4.5 (Tapping)
(Silver)
2-102-498-01



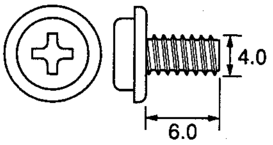
#33: M3.0 X 6.0
(Silver)
3-077-331-21



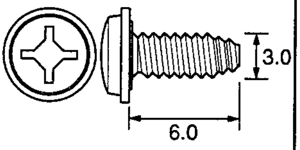
#34: M3.0 X 8.0
(Black)
3-077-331-41



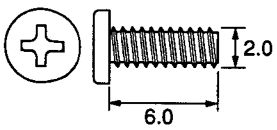
#35: M4.0 X 6.0 (Tapping)
(Silver)
3-975-291-02



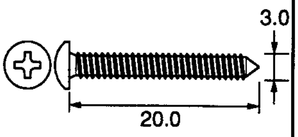
#36: M3.0 X 6.0
(Silver)
4-886-821-11



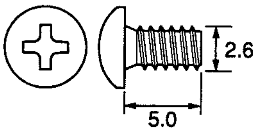
#37: M2.0 X 6.0 (Tapping)
(Black)
3-080-206-31



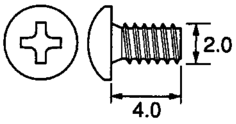
#38: M3.0 X 20.0 (Tapping)
(Silver)
7-685-651-79



#39: M2.6 X 5.0 (Tapping)
(Black)
7-685-791-09

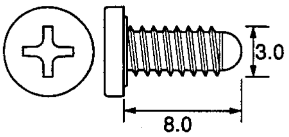


#40: M2.0 X 4.0 (Tapping)
(Silver)
7-685-851-04

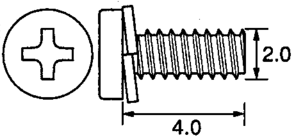


HARDWARE LIST (3/3)

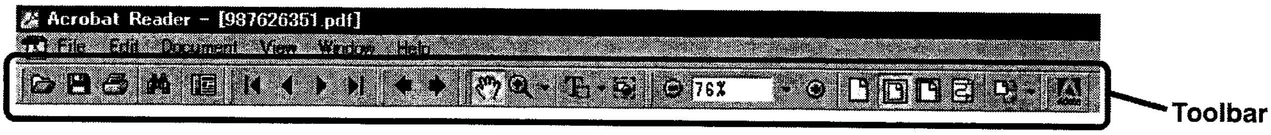
#41: M3.0 X 8.0 (Tapping)
(Silver)
3-065-748-01



#42: M2.0 X 4.0 (Tapping)
(Silver)
7-628-253-00



[Description of main button functions on toolbar of the Adobe Acrobat Reader Ver5.0 (for Windows)]


Acrobat Reader - [987626351.pdf]
File Edit Document View Window Help
76%
Toolbar

Printing a text

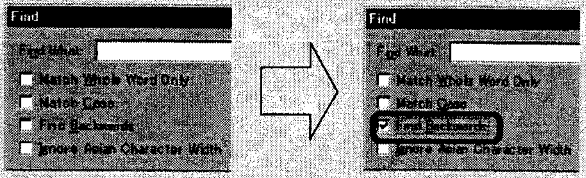
1. Click the Print button.
2. Specify a printer, print range, number of copies, and other options, and then click [OK].

> **Application of printing:**
> To set a range to be printed within a page, select the graphic selection tool and drag on the page to enclose a range to be printed, and then click the Print button.

Finding a text

1. Click the Find button.
2. Enter a character string to be found into a text box, and click the [Find]. (Specify the find options as necessary)

> **Application to the Service Manual:**
> To execute "find" from current page toward the previous pages, select the check box "Find Backward" and then click the "Find".



Find
Find What:
☐ Match Whole Word Only
☐ Match Case
☐ Find Backwards
☐ Ignore Asian Character Width

Find
Find What:
☐ Match Whole Word Only
☐ Match Case
☑ Find Backwards
☐ Ignore Asian Character Width

3. Open the find dialog box again, and click the [Find Again] and you can find the matched character strings displayed next. (Character strings entered previously are displayed as they are in the text box.)

> **Application to the Service Manual:**
> The parts on the drawing pages (block diagrams, circuit diagrams, printed circuit boards) and parts list pages in a text can be found using this find function. For example, find a Ref. No. of IC on the block diagram, and click the [Find Again] continuously, so that you can move to the Ref. No. of IC on the circuit diagram or printed circuit board diagram successively.
> **Note:** The find function may not be applied to the Service Manual depending on the date of issue.

Switching a page

- To move to the first page, click the ⏮.
- To move to the last page, click the ⏭.
- To move to the previous page, click the ◀.
- To move to the next page, click the ▶.

Reversing the screens displayed once

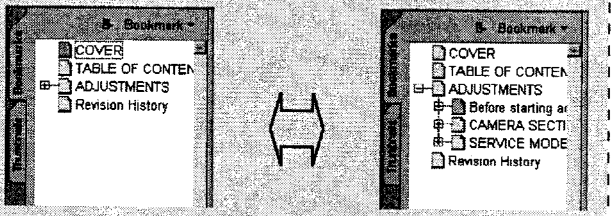
- To reverse the previous screens (operation) one by one, click the ⬅.
- To advance the reversed screens (operation) one by one, click the ➡.

> **Application to the Service Manual:**
> This function allows you to go and back between circuit diagram and printed circuit board diagram, and accordingly it will be convenient for the voltage check.

Moving with link

1. Select either palm tool, zoom tool, text selection tool, or graphic selection tool.
2. Place the pointer in the position in a text where the link exists (such as a button on cover and the table of contents page, or blue characters on the removal flowchart page or drawing page), and the pointer will change to the forefinger form.
3. Then, click the link. (You will go to the link destination.)

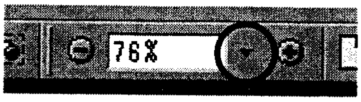
> **Moving with bookmark:**
> Click an item (text) on the bookmark pallet. and you can move to the link destination. Also, clicking ⊞ can display the hidden items.
> (To go back to original state, click ⊟)



Zooming or rotating the screen display

"Zoom in/out"

- Click the triangle button in the zoom control box to select the display magnification. Or, you may click ⊕ or ⊖ for zooming in or out.

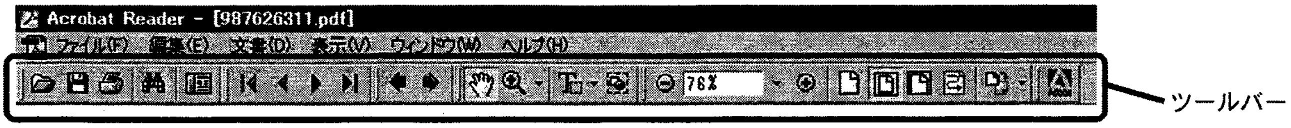


"Rotate"

- Click rotate tool, and the page then rotates 90 degrees each.

> **Application to the Service Manual:**
> The printed circuit board diagram you see now can be changed to the same direction as the set.

【Adobe Acrobat Reader Ver 5.0(for Windows)ツールバー内にある主なボタンの機能説明】


Acrobat Reader - [987626311.pdf]
ファイル(F) 編集(E) 文書(D) 表示(V) ウィンドウ(W) ヘルプ(H)
76%
ツールバー

文章を印刷する

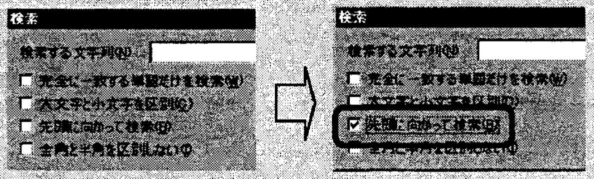
1. 印刷ボタン🖨をクリックする。
2. プリンター、印刷範囲、印刷部数、および他のオプションを指定して「OK」をクリックする。

印刷の応用：
ページ内で印刷したい範囲を設定するには、グラフィック選択ツール▣を選択し、ページ上をドラッグして印刷したい範囲を囲んでから印刷ボタンをクリックする。

文章内を検索する

1. 検索ボタン🔍をクリックする。
2. 検索したい文字列をテキストボックスに入力して「検索」をクリックする。(必要に応じて検索オプションを指定する)

サービスマニュアルへの応用：
現在のページから前ページに向かって検索する場合は「先頭に向かって検索」のチェックボックスを選択してから「検索」をクリックする。


検索
検索する文字列(W)
☐ 完全に一致する単語だけを検索(W)
☐ 大文字と小文字を区別(C)
☐ 先頭に向かって検索(B)
☐ 全角と半角を区別しない(J)
検索
検索する文字列(W)
☐ 完全に一致する単語だけを検索(W)
☐ 大文字と小文字を区別(C)
☑ 先頭に向かって検索(B)

3. 検索ダイアログボックスをもう一度開き、「次を検索」をクリックすると次に出てくる一致文字列を検索することができる。(前回入力した文字列が、テキストボックスにそのまま表示されている)

サービスマニュアルへの応用：
文章内にある図面ページ(ブロックダイヤグラム、回路図、プリント図)および部品表ページなどは、この検索機能を使って部品検索することができる。例えば、ブロックダイヤグラム上でICのRef. No.を検索し、「次を検索」を続けることによって回路図、プリント図上にあるICのRef. No.へ次々と移動する。
注意:発行年月日によって検索できない場合もあります。

ページを切り換える

- 最初のページに移動する場合、⏮をクリックする。
- 最後のページに移動する場合、⏭をクリックする。
- 前のページに移動する場合、◀をクリックする。
- 次のページに移動する場合、▶をクリックする。

一度表示した画面へ逆戻りする

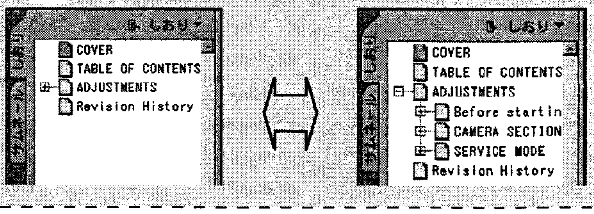
- 前の画面(操作)へ1つずつ逆戻りする場合、⬅をクリックする。
- 戻した画面(操作)を1 つずつ前に進める場合、➡をクリックする。

サービスマニュアルへの応用：
回路図とプリント図を行き来できるので電圧チェックに便利です。

リンクを使用して移動する

1. 手のひらツール✋、ズームツール🔍、テキスト選択ツールT、グラフィック選択ツール▣のいずれかを選択する。
2. 文章内のリンクのある場所(表紙および章目次ページのボタン、外し方のフローページ、図面ページでは文字が青色になっているところなど)にポインタを置くと、ポインタが人差し指の形「☝」に変わる。
3. そのままリンクをクリックする。(リンク先へ移動する)

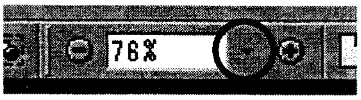
しおりを利用して移動する：
しおりパレット上の項目(テキスト)をクリックするとリンク先へ移動することができる。また、「⊞」をクリックすると隠れている項目を表示することができる。
(「⊟」をクリックすると元に戻る)


しおり
COVER
TABLE OF CONTENTS
ADJUSTMENTS
Revision History
しおり
COVER
TABLE OF CONTENTS
ADJUSTMENTS
Before startin
CAMERA SECTION
SERVICE MODE
Revision History

画面の表示を拡大、縮小または回転させる

「拡大/縮小」

- 倍率ボックスの三角矢印ボタンをクリックし、表示倍率を選択する。または⊕、⊖をクリックしても使えます。



「回転」

- 回転ツール↻をクリックすると、ページが90度ずつ回転する。

サービスマニュアルへの応用：
見ているプリント図をセットと同じ向きに変えられます。

HVR-M25J/M25U/M25N/M25E/
M25P/M25C
RMT-DS5

SONY®

SERVICE MANUAL

Ver 1.1 2006. 08

US Model
Canadian Model
AEP Model
E Model
Chinese Model
Japanese Model

SUPPLEMENT-1

File this supplement with the service manual.

(DI06-047)

- **Change of Repair Parts**

HVR-M25J/M25U/M25N/M25E/M25P/M25C
9-852-126-81

Sony EMCS Co.

2006H0500-1
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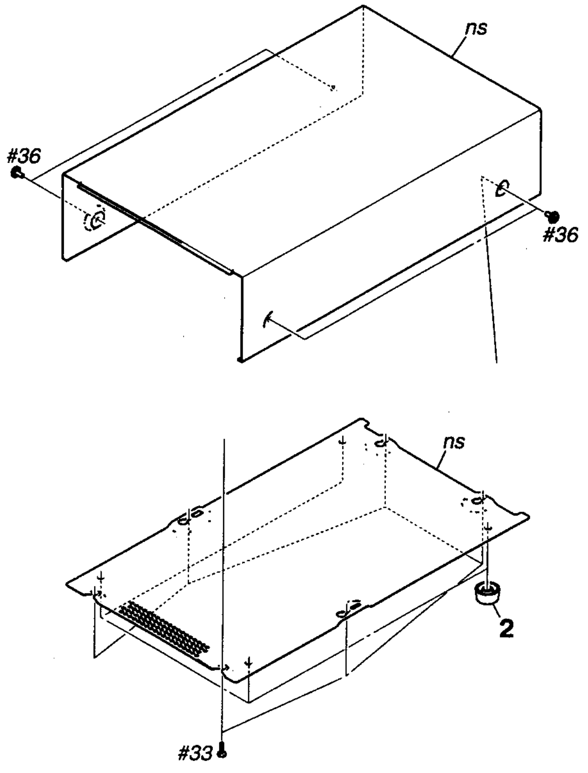
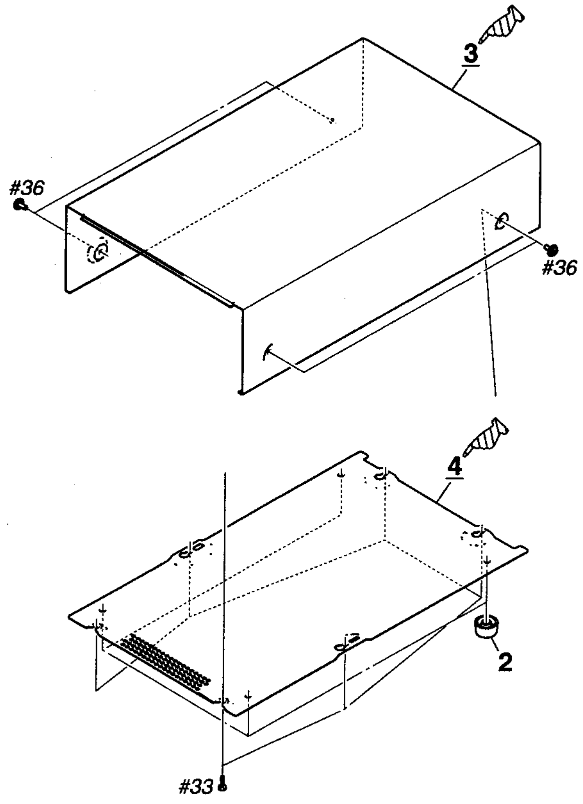
Published by Kohda TEC

5. REPAIR PARTS LIST

☞ : Points added portion.
☛ : Points changed portion.

5-1. EXPLODED VIEWS

Page	Former	New
5-2	 Ref. No. Part No. Description ——— ——— ———————— ——— ——— ————————	 Ref. No. Part No. Description 3 3-987-158-11 CASE, UPPER ☛ 4 3-072-984-01 PLATE, BOTTOM ☛